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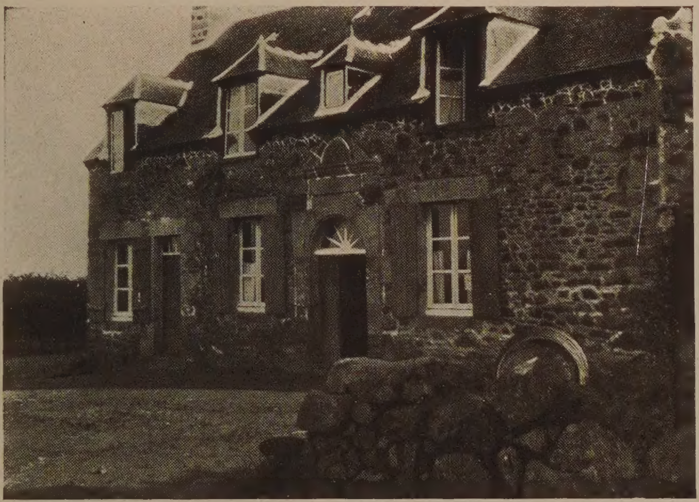
The Cottage Types of Northern France

Their Adaptability for the American Small House

By Thomas Raymond Ball

THE economic structure of our modern American civilization has produced a new sense of values. The cost of labor has brought to many an enforced self-denial in the matter of domestic service. Large establishments are simplified, small households likewise, and we find a new group, unknown in the old scheme of things, the servantless gentry. As a contribution to this idea, a cause and also an effect of it, we have the labor-saving device, the washing-machine, the dish-washer, the electric stove and iron, and the neat kitchen cabinet with a place for everything and everything supposedly placed, with gay blue-and-white crocks, and a convenient little shelf that pulls out and relegates to the past the old-fashioned kitchen table. Our plumbing is becoming more and more efficient, and our heating is regulated by a thermometer. In the country, to be sure, we must still feed the furnace coal, but in the city we light the gas-heater on the first chilly day of autumn and turn it off when the frost leaves the ground.



Farmhouse near St. Brieuc.

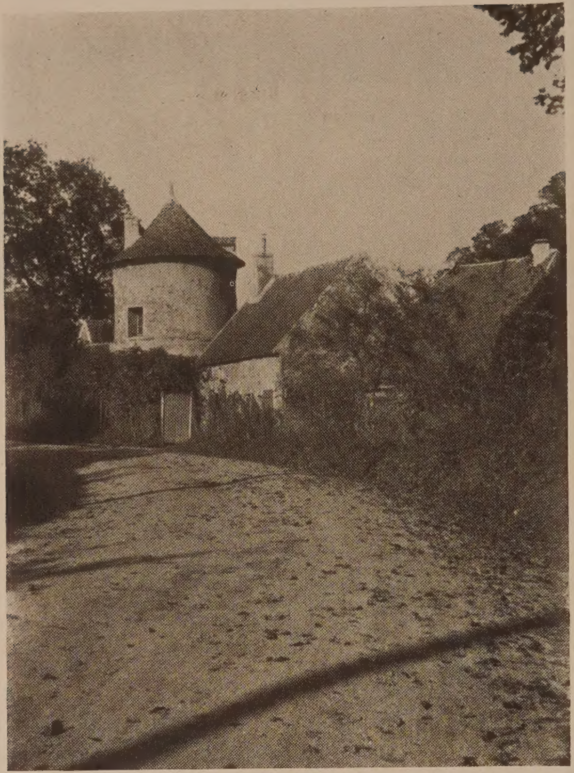
With this perfection of household machinery comes the need for better architecture, and the small house of the country and suburbs has become a factor of tremendous importance in the architectural development of America. Really beautiful little houses are being built, houses that are compact and yet commodious, that have charm and character and dignified simplicity.

Our architectural inheritance is rich in small houses. We have the varied types of Puritan New England, the story-and-a-half cottages with latticed front porch, and the seventeenth-century houses with overhanging upper story and long lean-to, weathered a rich old brown, with a clump of yellow lilies by the back door, and a lilac-bush shading the parlor window. We have the little houses with gambrel roof and narrow dormers, and the big square farmhouses with central chimney and regular fenestration. The stone and brick houses of Dutch descent are also ours, as are the smaller manor-houses of the South, offspring of a genial Georgian civilization. The West and far South have a rich Spanish tradition all their own.

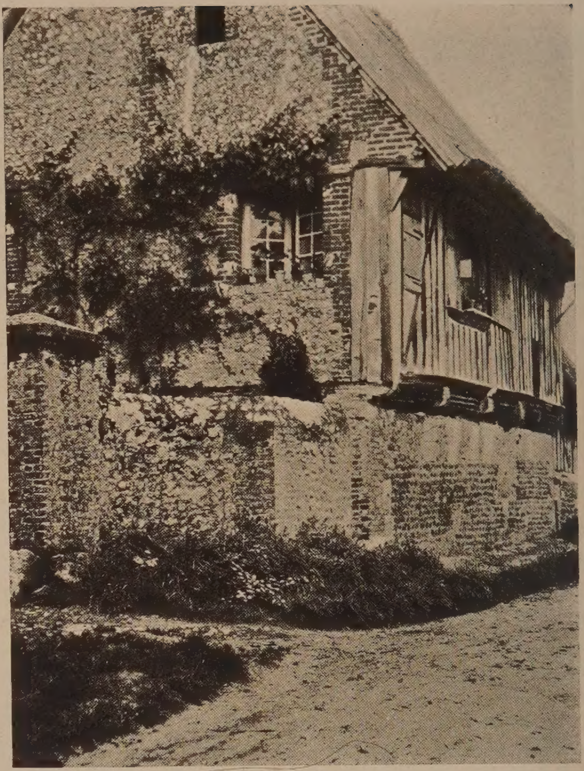
We sometimes forget that we have French ancestry as well, and that one suburb of New York, New Rochelle, owes its origin and early growth to French settlers. We should, however, never forget the part that French help played in our fight for national independence, nor the almost sacred ties that united our country with the French republic in a common struggle for a common cause. From France we can learn much, and a study of the domestic architecture of its countryside cannot but give us an affection and respect for the civilization that produced it and for the people who have cherished and protected it.

The primeval character of northern France is not so different from that of our own land, and its geographical conditions are not dissimilar. Its natural beauty is great, but its artificial beauty is even greater. There are the stately hills and lovely valleys, the rivers that seek the sea in graceful curves, there are the forests preserved with ever-watchful care, but there are also the fields and pastures, hedgerows and gardens, and little farms and cottages, all evidences of the kindly hand of man.

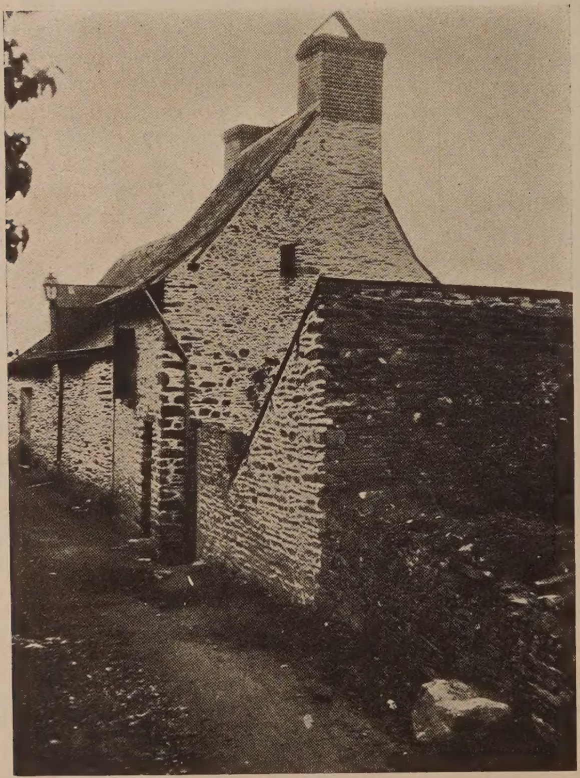
Diversified as are the architectural types of northern France, they have one point in common: cohesion with the soil. The half-timber farmhouses of Calvados, the rough stone cottages of Brittany, and the story-and-a-half houses of the Loire valley, with their decorated dormers and outside stairways, are all distinctive, but all take on the color and character of the landscape in which they seem to grow.



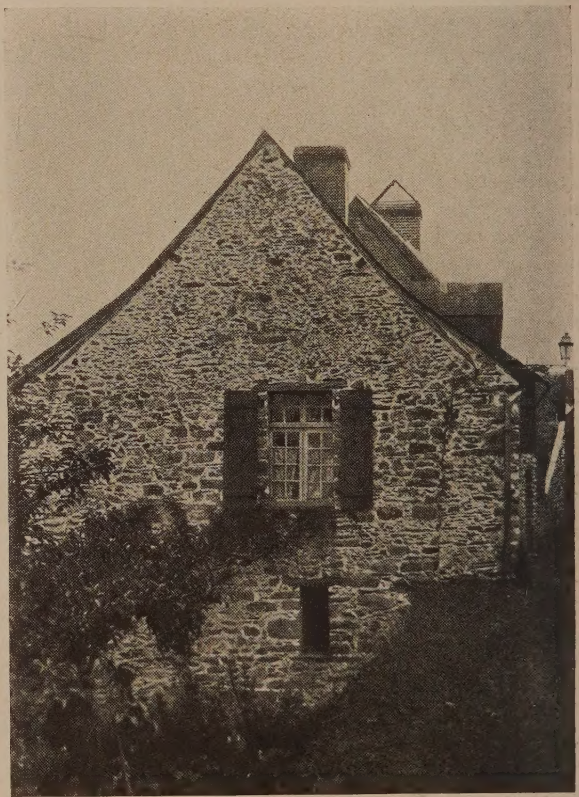
Farm group near Osny, Seine et Oise.



Farmhouse near Honfleur, Calvados.



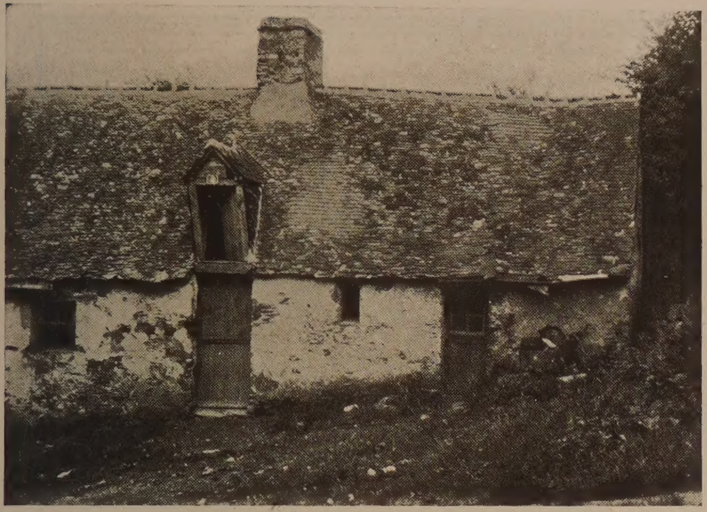
Cottages near Vitre.



Cottage near Vitre.

THE COTTAGE TYPES OF NORTHERN FRANCE

The half-timber houses of Normandy remind one of the little towns of old England. In the mediæval scheme of things the detached farmhouse was exceptional, and the tendency to seek the shadow of the cathedral or castle gave us the quaint old houses of Lisieux and Caen, while fishing and commerce were responsible for the jolly little seaport of Honfleur. The town houses are outside our realm, but there is much in them that we would do well to study and remember. The roof lines and chimneys, the doorways and winding stairs, the covered passages and courtyards, all have a lesson for us. One amusing detail that should not be forgotten is the broad, shelf-like sill of the ground-floor windows, so planned that should trade be the family calling the counter and showcase are already there, or should the house be one of refreshment the bar is a structural element.



Brittany Cottage.

The use of local material, of simple form, and traditional workmanship combine to give this quality of homely charm.

The ground plan of the average French farmhouse offers but little in the way of practical suggestion. Planned in other ages, under totally different conditions, as a shelter for both man and beast, it ignores modern standards of hygiene and sanitation. However, the relation of the house to its surroundings and the location of outbuildings and walls form a lesson in pictorial as well as architectural composition; and the outgrowth of lean-tos and wings, the utilitarian position of doors and gates, the unusual and very often uneven fenestration are all worth study.

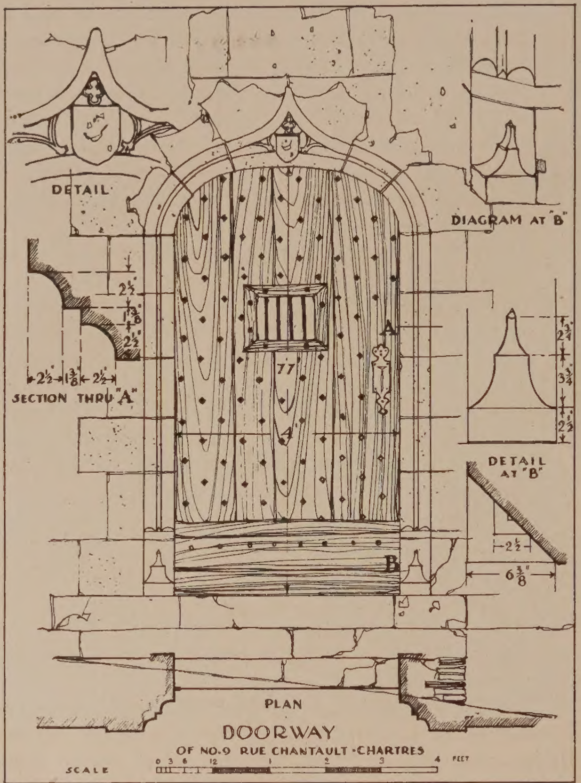
The detached house is more often found in Brittany, where the country is rolling and open, and where you can often see for miles across patches of meadow and tilled land, fields of cabbages and little orchards, and tiny hamlets, each with its simple, graceful church and straggling houses. Sometimes there is a little manor-house with steepled turrets, and big hay-barn, high stone wall, and ornamented gateway, sometimes a two-room cottage of rough stone with roof of mossy thatch, primitive and picturesque. An agreeable and adaptable type often found resembles very much in mass and form, and is not unlike in ground plan, the big square farmhouses of our own New England. It is built of the native stone with a chimney at either end, windows placed at equal intervals, doorway centred, and roof of slate. Often family needs necessitate the construction of lean-to additions to the original house, sometimes at either end and sometimes at the rear. This last arrangement is the same as the "salt-box" house familiar to us all, and forms an excellent example of like conditions and demands producing like results. These additions may be used as stables, or the animals may have a building to themselves placed at right angles to the main house. In which case stone walls enclose the other two sides of the square, and a little court-yard is formed, serving as either stable-yard or garden. There is, of course, no invariable rule, and you may find the addition not as a lean-to at all, but as a long, narrow wing, much like our own kitchen ells and woodsheds. Another type has a shed roof, and seems to back up against a long stone wall. It has no windows on the wall side, and offers suggestions to those of us who must find a means of protection from the piercing northwest winds of winter. The factor that adds tremendously to the beauty of these houses is the line of the roof. The pitch is never low, and the shed roofs are of the same steepness as the roof of the main building. Color also plays an important part, sometimes the cool gray of slate, sometimes the varying tones of red and brown tiles. Thatch is used extensively in the smaller cottages, which are minute in scale, and very interesting and picturesque. You see many that consist of a cellar below built mostly above the ground, and one living-room above, reached by a flight of stone steps.

The outside stairway found all over France has become almost standardized in the houses of the Loire valley. In form they are the story-and-a-half cottage of stone or stucco. Their distinction lies in three things: the position of the chimney, the dormer-window, and the outside stairway above mentioned. The chimney is always at the same end of the house as the stairway; the end wall forms one side of the chimney, which pierces the roof just in front of the peak, the back end of it being on the ridge; and the up-stairs door which opens on the stairway is just beyond the chimney. The staircase is of stone, like the house, and is laid up solid. The dormer-window receives a great deal of attention. It usually centres over the front door, and is almost always elaborate in form and detail. The exterior arrangement of these houses is very interesting, but I doubt the convenience of the inside plan.

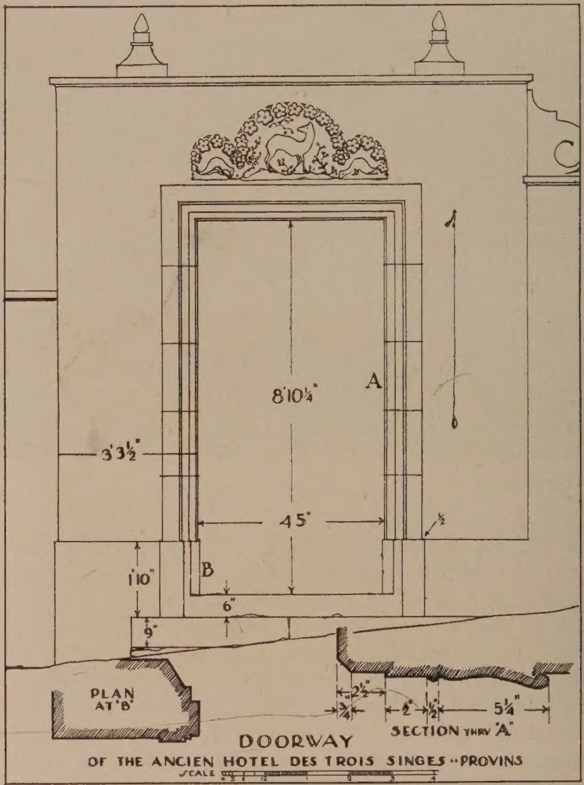
There is constant variety in these French houses, variety of material, of construction, of detail. The local stone is utilized, and with it brick, and the use of stucco is almost universal. Plaster is used with the timber construction, or sometimes the sides of the houses are hung with slate, giving an effect much like the weathered shingles of America. You find the overhanging upper stories with chamfered beams and carvings, and you find plain white walls with well-placed windows and doors.

The two big things that we learn from this ancient domestic architecture are permanence and picturesqueness. With competent workmanship and sound construction, we too can have homes that will endure; and the careful choice of the location, the application of the laws of pictorial composition, and sympathetic co-operation with nature in planting trees and garden, will give us some of the subtle quality of beauty that is inherent in the gentle land of France.

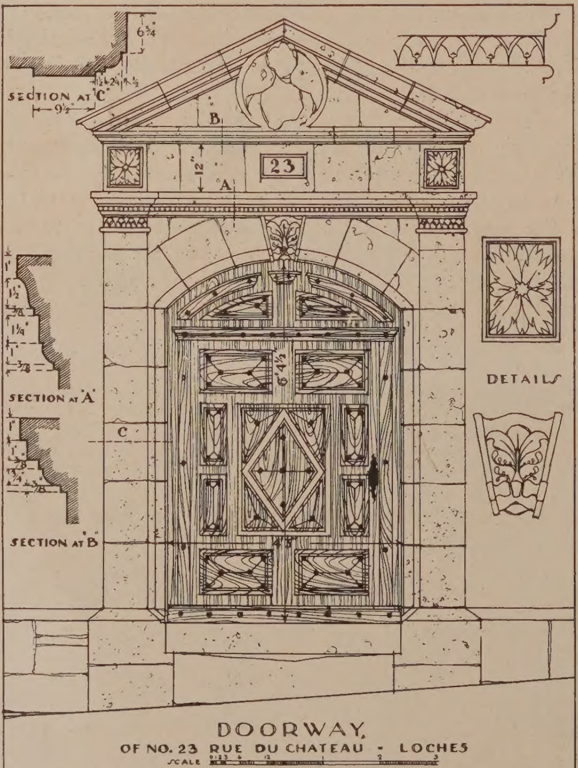
Cottage near Bayeux.



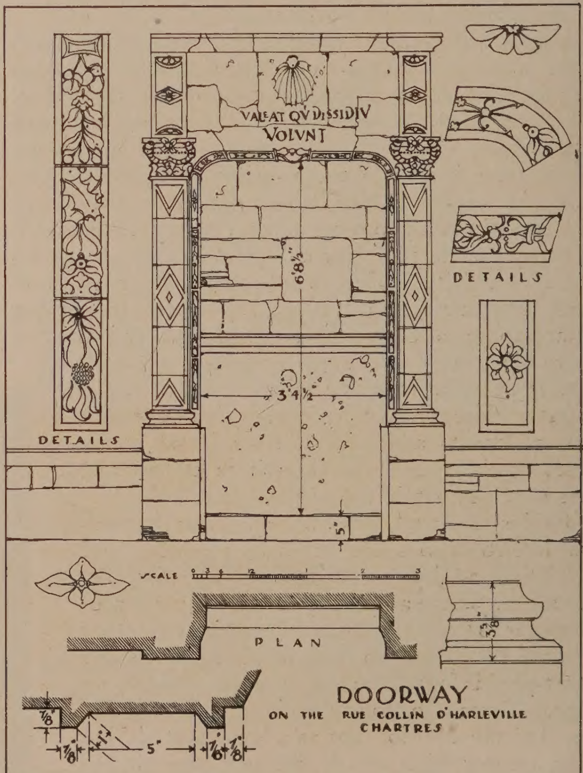
DOORWAY
OF NO. 9 RUE CHANTAULT - CHARTRES



DOORWAY
OF THE ANCIEN HOTEL DES TROIS SINGES - PROVINS



DOORWAY
OF NO. 23 RUE DU CHATEAU - LOCHES



DOORWAY
ON THE RUE COLLIN D'HARLEVILLE
CHARTRES

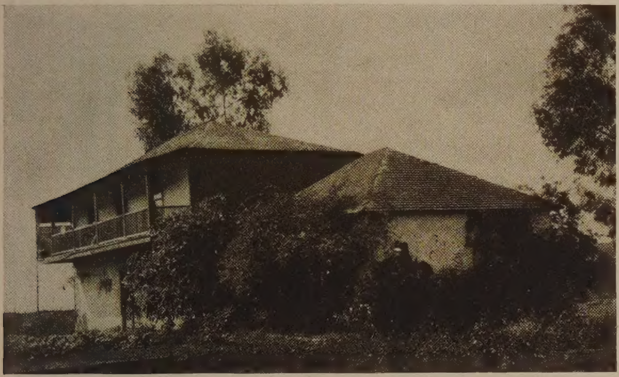
FOVR SIMPLE FRENCH DOORWAYS

MEASVRED AND DRAWN BY SAMUEL CHAMBERLAIN

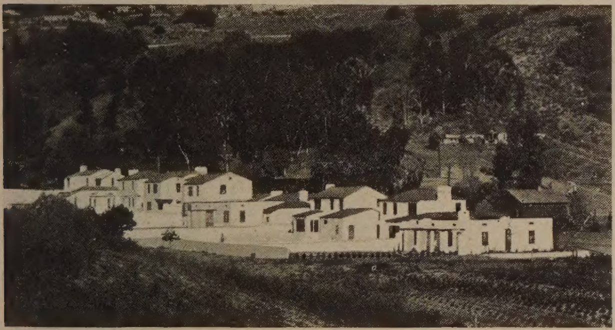
Traditional Architecture

Santa Barbara

WHATEVER may be the influences that hold us together as a nation in common bonds of interest and ideals, in aims and purposes, we must recognize and value the fact that the many widely separated sections of the United States have individual traditions and certain historic background that mark them with distinct personalities. For this reason, the overnight traveller generally senses the change of customs, manners, and even speech, as though he had journeyed into some strange land.

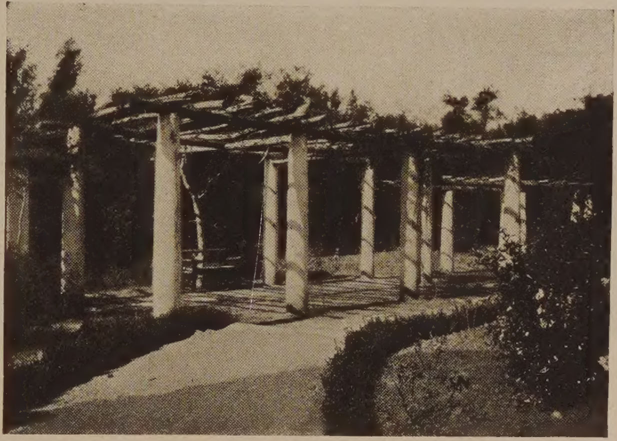

Oldest Adobe House in Santa Barbara.

This personality is more realized in the work of preservation and restoration of buildings that have withstood the ravages of time and, while it is generally conceded that Americans destroy ruthlessly much that might be saved, the rapid expansion of our large commercial centres rapidly crowds out buildings that cannot hold their place in the onrush of life. But to those small cities and communities that are not destined to become centres of commercial activity, opportunity is given to hold the charm of historic or romantic spirit in its architecture even though they are still very young by comparison with old-world cities.


Grenada Cottages, Santa Barbara. David Kirkuff.

Good architecture depends on the natural elements of climate and topography as well as the habits and standards of living, all of which impose structural conditions and limitations. When it is once decided that modern life can conform and adapt itself and when a man with vision will plan and modify the traditional type to meet, half-way, existing conditions—when this man is an architect who succeeds in gradually converting an enthusiastic little group around his idea, the city or town may consider itself in a fair way to the establishment of its traditional architecture.

The city of Santa Barbara, Calif., had such a prophet in the late James Osborne Craig. Under his inspiration the city is making a concerted effort to preserve the old adobe buildings facing the proposed civic centre, to restore and occupy these buildings. It is one of the most important projects attempted by an American community. "It is a very remarkable thing that in Santa Barbara, even though it be in a small way, there is a real concerted action to do this thing—to preserve in a dignified, unaffected manner the architectural beauty that is the heritage of all Californians. Though many may doubt the value of this work, in the last analysis does not architecture express, more than any other art, the life and character of a people, and, therefore, influence them?" The slow growth of Santa Barbara has saved the planners of the city from making mistakes which could never be remedied.

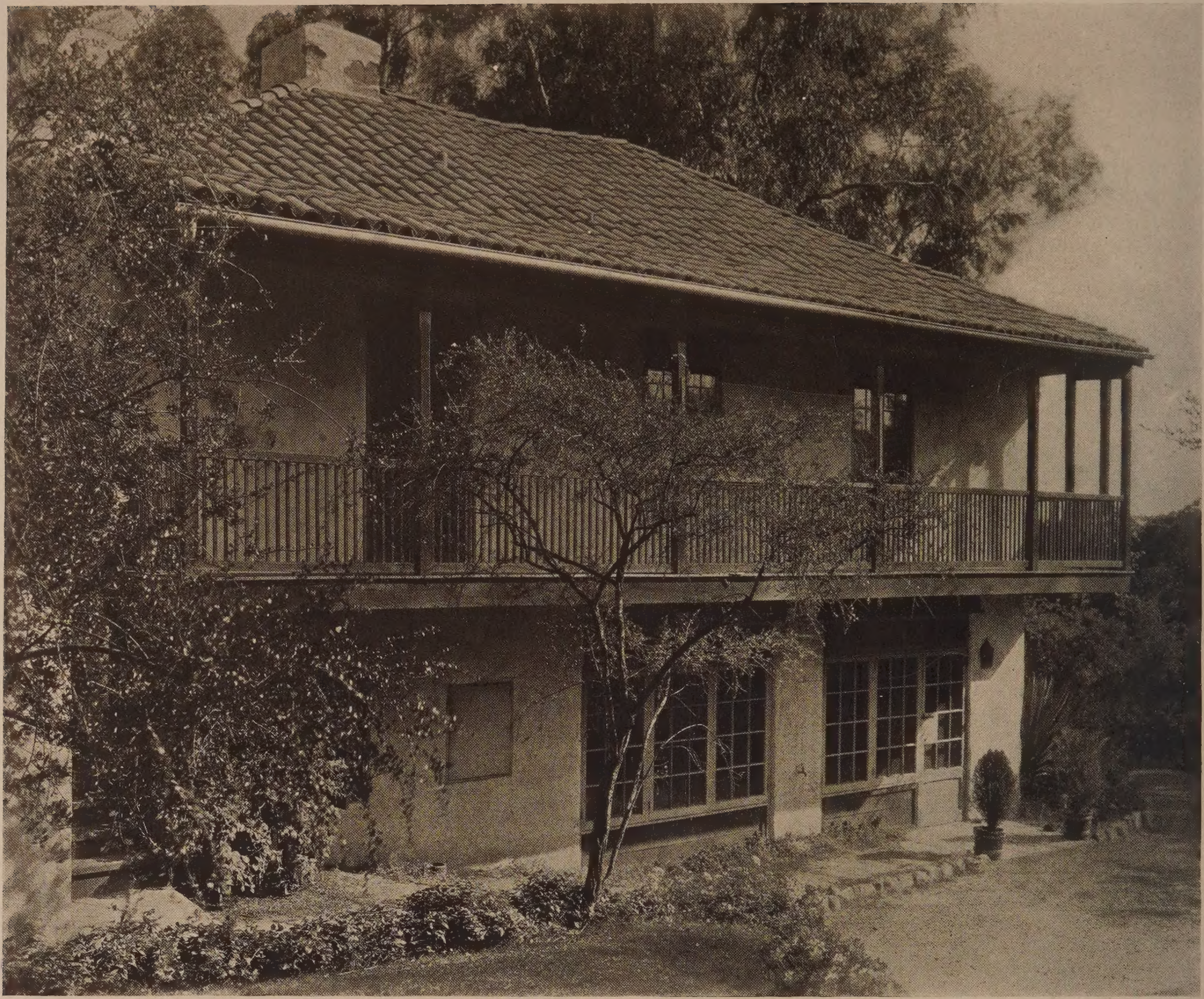

Garden, Mrs. Theodore Sheldon.

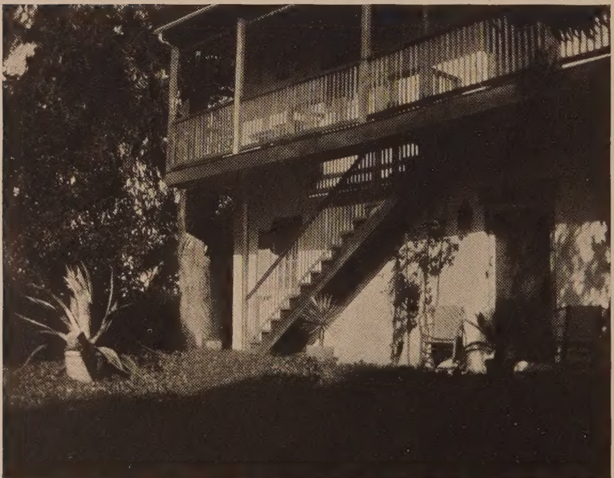
Mr. Craig's work has greatly influenced the character of private homes, and while he did not live to achieve his ambition, he left examples of completed residential work that attest the soundness of the principle he stood for.

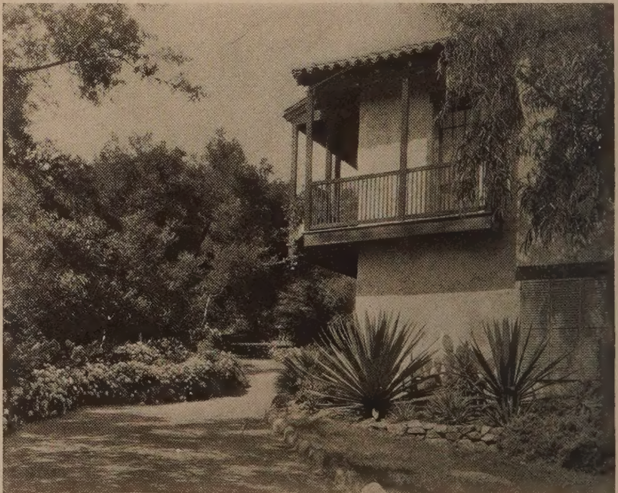
His earliest work was the residence of Mrs. Theodore Sheldon at Montecito. The oldest adobe house in Santa Barbara was taken as prototype. The simple, dignified lines of these structures, their soft shadows on the uneven plaster, the broken lines of red tile, make for unrivalled architectural beauty.

There is an easy grace, a sense of fitness and harmony with nature

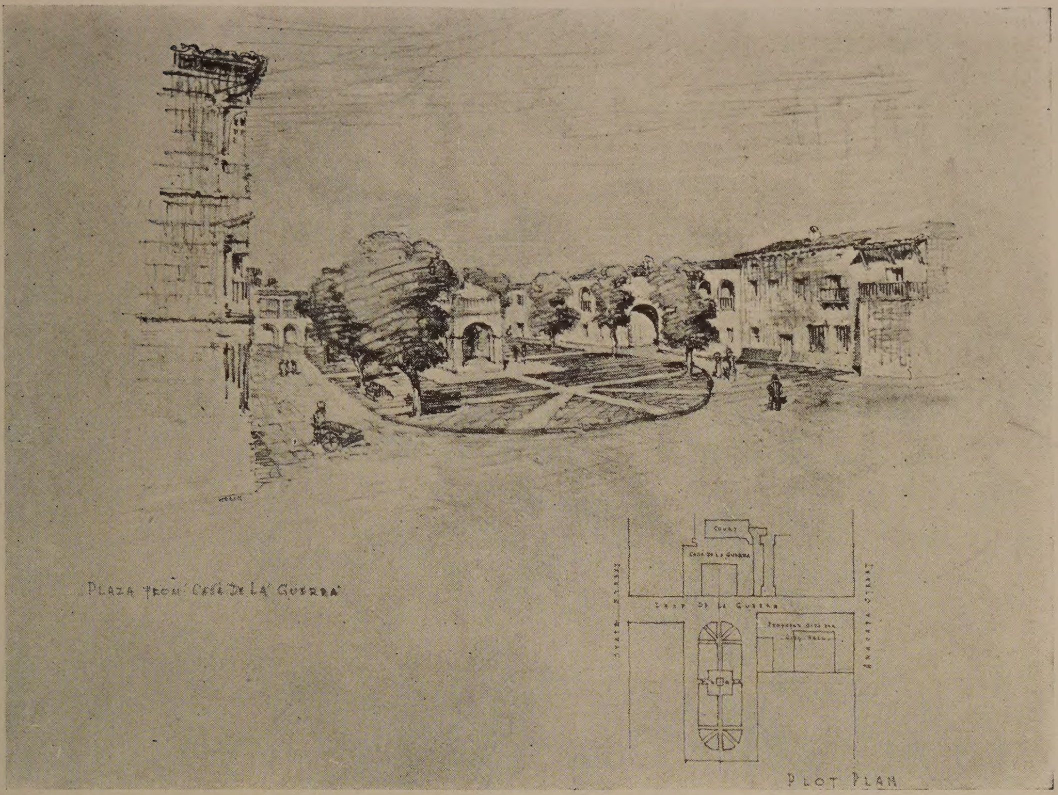
Other communities in all parts of the country could take note of these charming small houses of Santa Barbara—not with the idea of copying anything, but rather to look more closely into their own history for the spirit or tradition of their architecture.



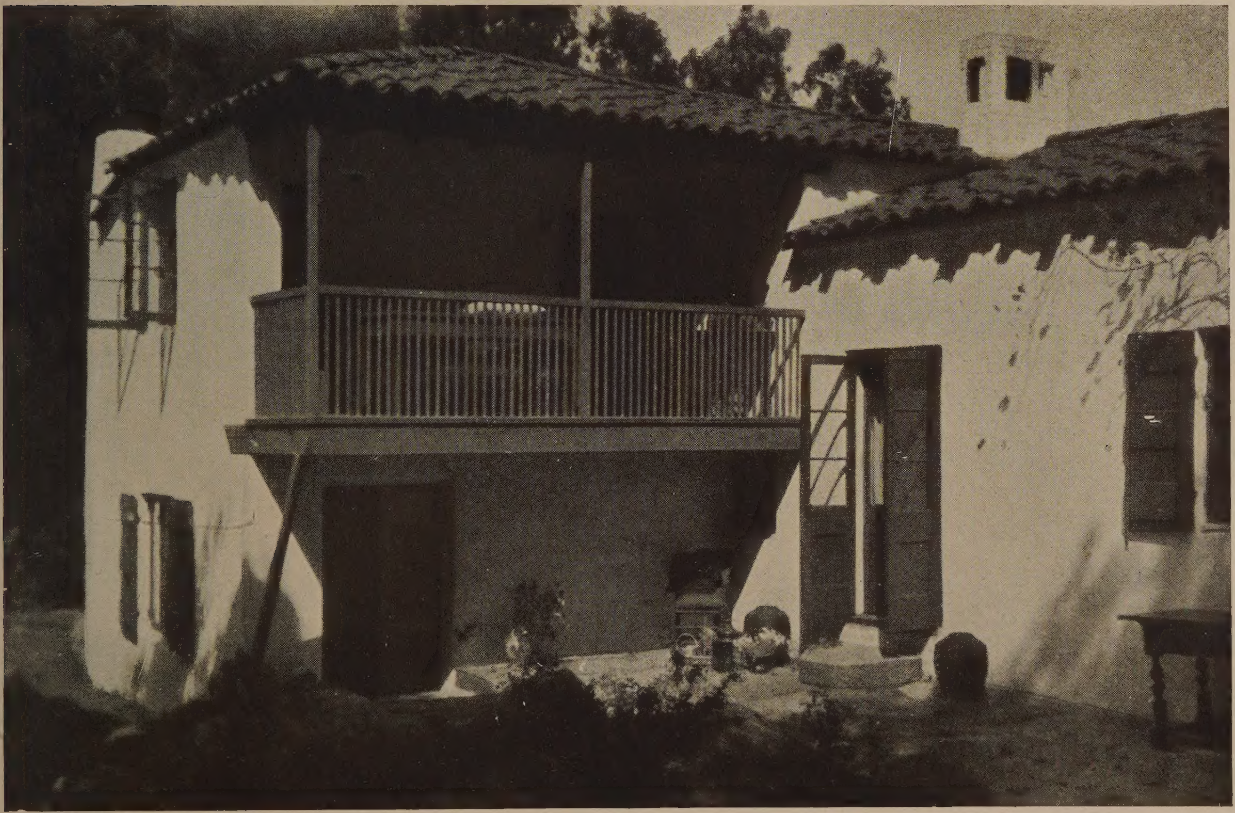




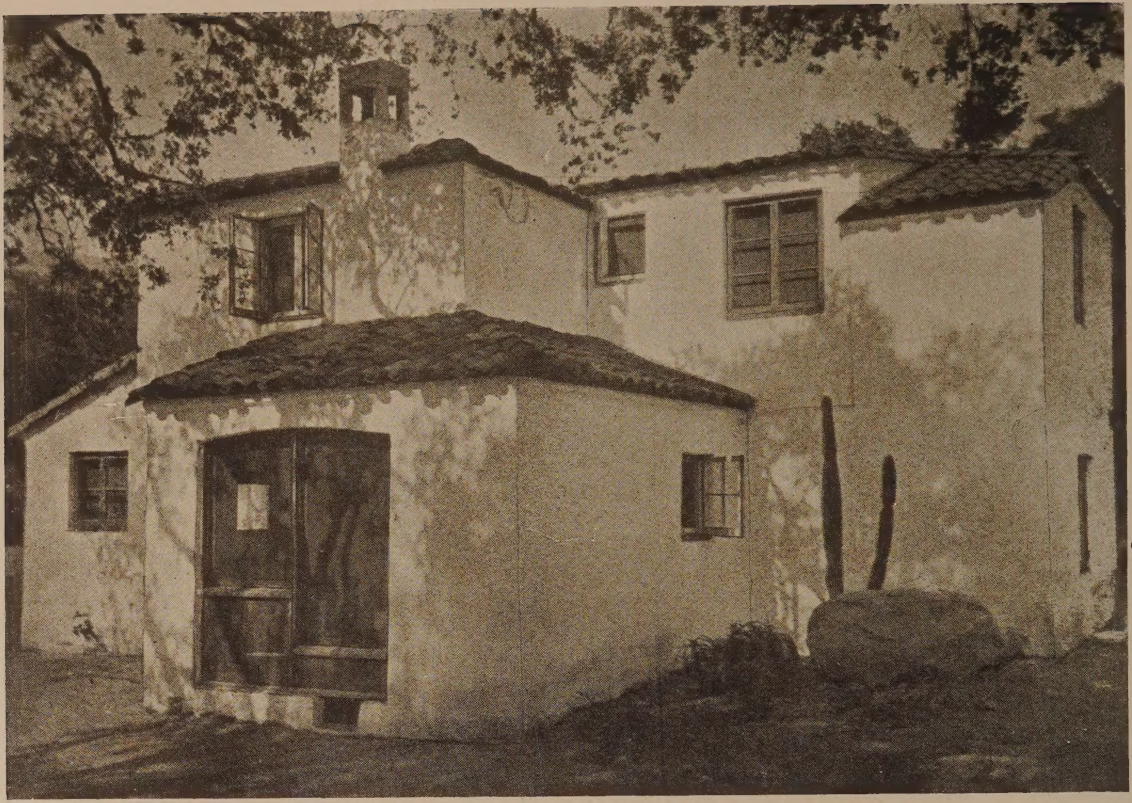
RESIDENCE, MRS. THEODORE SHELDON, MONTECITO, SANTA BARBARA, CALIF. James Osborne Craig, Architect.

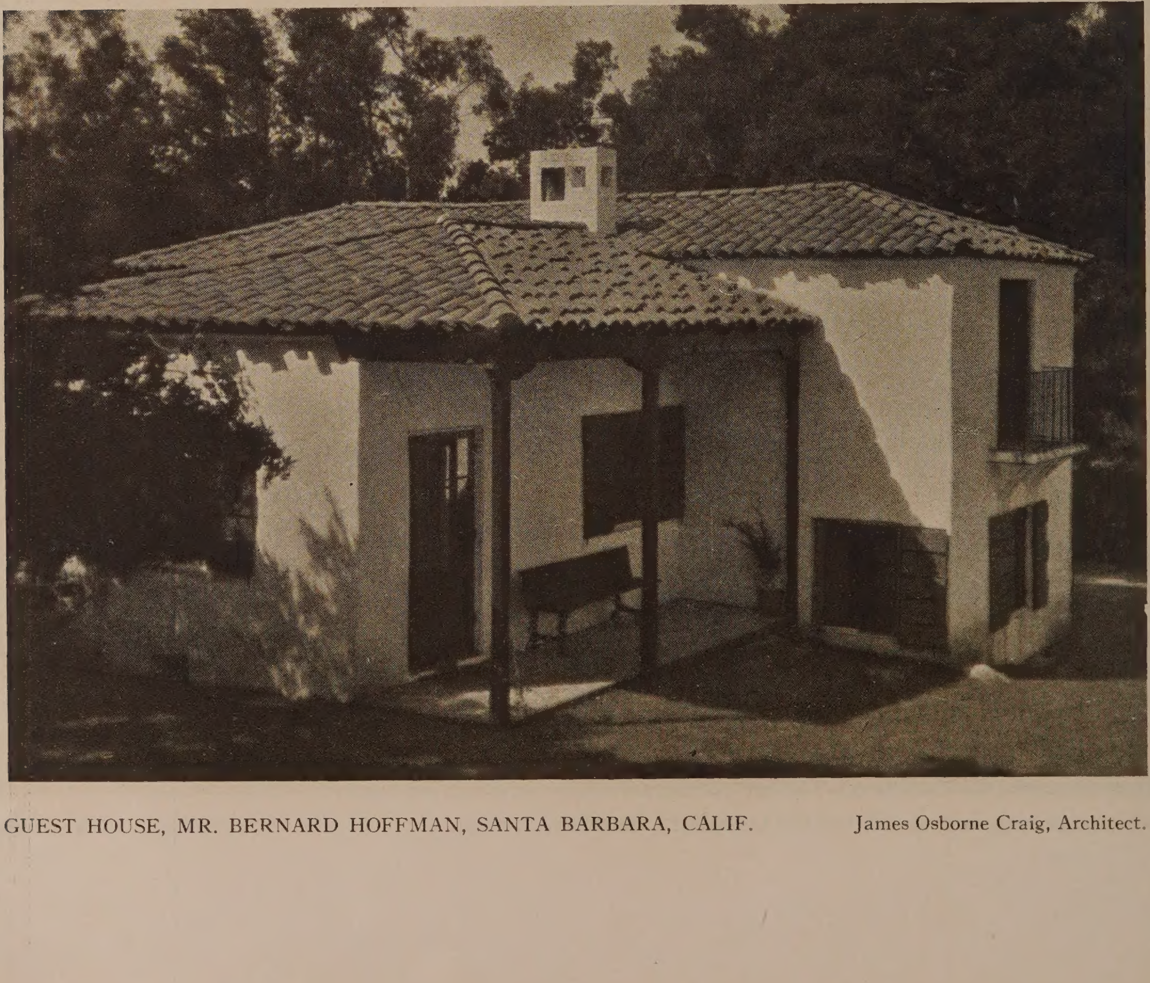


STUDY AND PLAN FOR THE PLAZA DE LA GUERRA CIVIC CENTRE, SANTA BARBARA, CALIF.
James Osborne Craig, Architect.



GUEST HOUSE, MR. BERNARD HOFFMAN, SANTA BARBARA, CALIF. James Osborne Craig, Architect.





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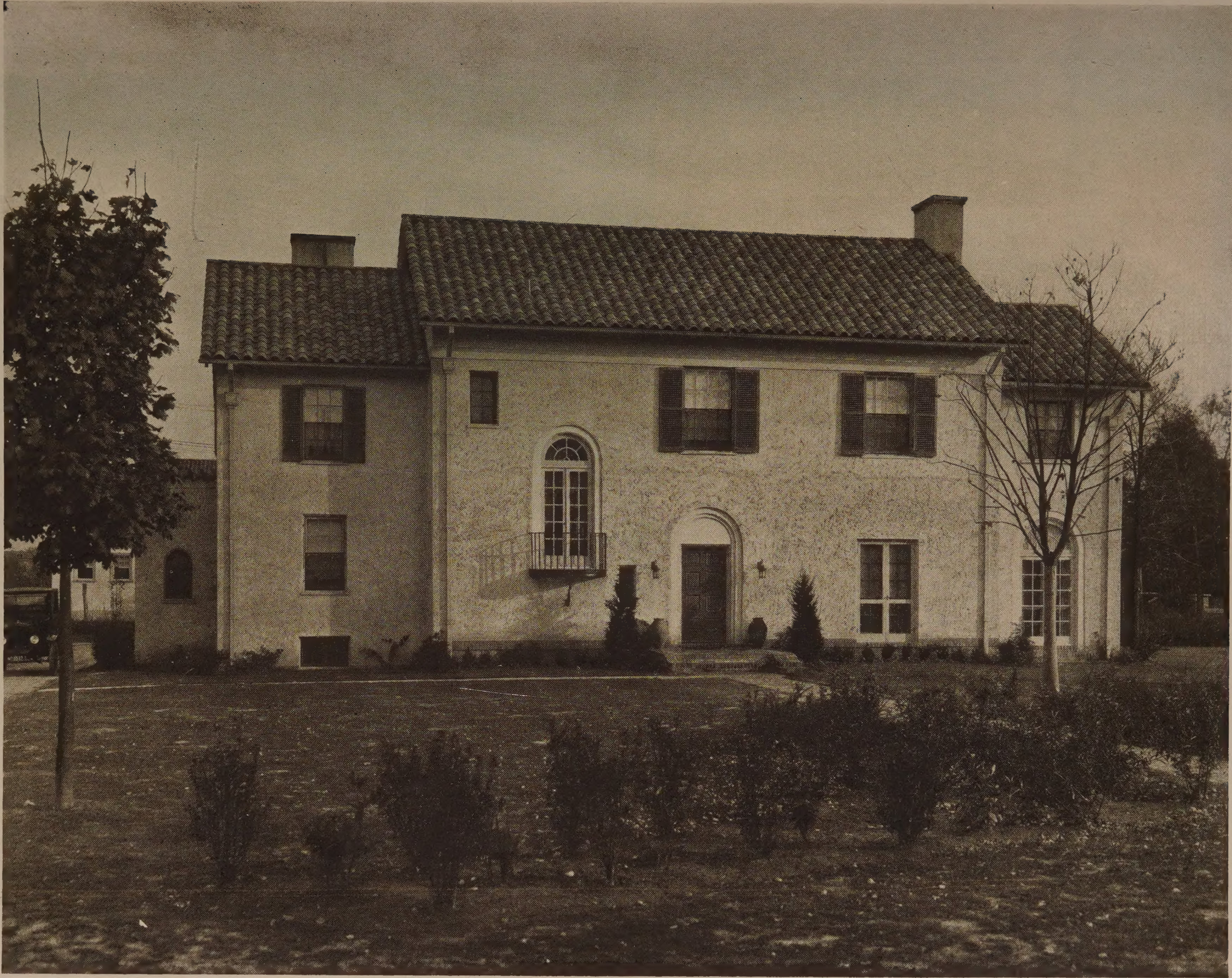
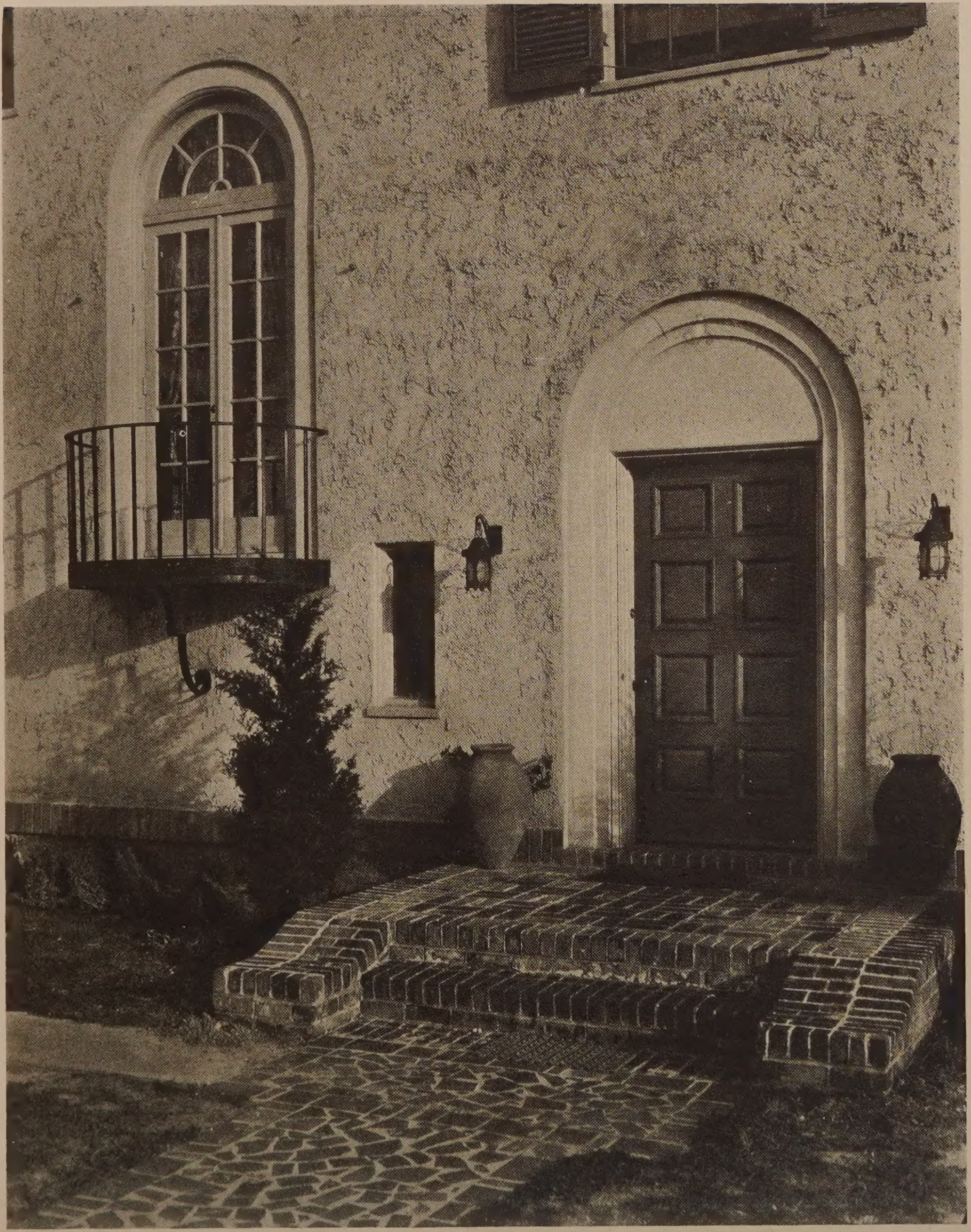


RESIDENCE, J. H. CHEEK, RICHMOND, VA.

W. Duncan Lee, Architect.



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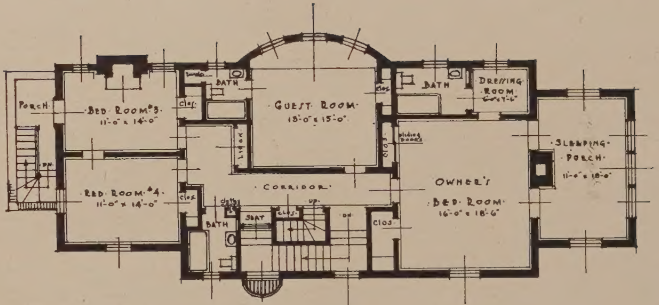

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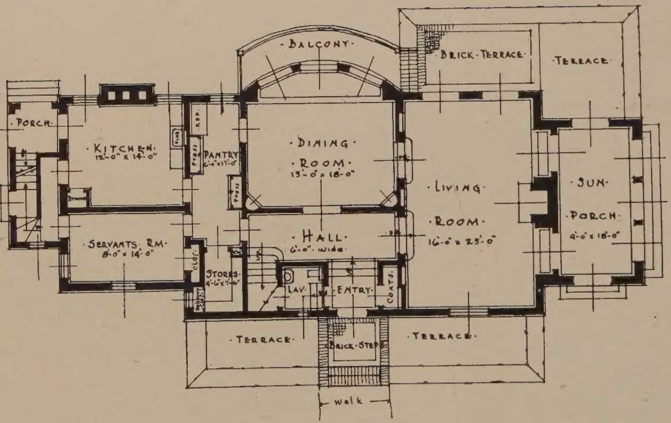

1ST·FLOOR·PLAN·

W. Duncan Lee, Architect.

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Editorial and Other Comment

The Small House

WE present in this number a group of small houses in various parts of the country representing recent work of architects who have added elements of beauty and convenience in planning the house comfortable. It is gratifying to observe the constant advance in good taste as applied to small house-building, and to mark the evidences of a wider appreciation among laymen that any house is the better for having the supervision of a qualified architect.

The American country and suburban house have shown the ever-increasing value of trained judgment in both design and planning.

If in New England the tendency is still, happily, to preserve the best elements of the traditional Colonial, there are yet apparent a freedom of treatment and a capacity to make old things over in ways that are recognizable as respecting tradition, while at the same time realizing the need for more fluent and better-organized planning.

We have had a fine lesson in the value of simplicity in much of the recent small-house construction on the Pacific coast. They know how to do it out there, and they are fortunate in having a climate that permits of construction that makes for economy. Many of the California houses, however, can be built in the more rugged climate of the East and made comfortable by efficient heating arrangements.

Stucco and tile are made to take on new aspects of beauty in these far coast structures, and the same thing is obvious in the work that is being done throughout the Southwest, in Arizona and New Mexico.

In the South the California type has become increasingly popular, especially in Florida, where the climate is amenable.

About Philadelphia stone is much favored, and there is a substantial aspect of stability and dignity about the houses of this region.

The small house is no longer just any old kind of a house; it has become in many instances a thing of beauty and pride to both the owner and the community.

There has never been a time in the history of the country when the demand for the small house was so insistent. The cities are becoming intolerable for thousands, not only in the mere matter of high rents and restricted quarters, but in the congestion of population. Families with children to bring up are finding the city apartment with its promiscuous mingling of by no means selected tenants beyond endurance, and the city streets a never-ending menace to life and limb, due to the incredible whirling of motor traffic.

Back to nature is not so much the cry, as back somewhere where one can breathe unpolluted air and move about without waiting for the whistle of the traffic officer.

The world *is* too much with us, but we wonder what the late Mr. Wordsworth would have said if he lived in these parlous times of yellow and pink and other kinds of vari-colored taxis and, joking aside, the delightfully democratic and get-there ubiquitous Henrys.

Bertram G. Goodhue

MR. GOODHUE'S sudden, most unexpected, and deplored death on the 24th of April came as a distinct shock to all of his friends, and the architectural profession of which he was such a distinguished member has lost one of its most inspiring leaders. He was first of all an artist, and in everything that he did this was made manifest. To exquisite taste he united great knowledge and a receptive and sympathetic attitude toward the things that were being done by modern man.

With Saint Thomas's beautiful church on Fifth Avenue, designed by Cram, Goodhue & Ferguson, he will always be identified, especially with the great reredos which is such a notable feature of that masterpiece of modern Gothic.

The church of Saint Vincent Ferrer on Lexington Avenue, Saint Bartholomew's on Park Avenue, the San Diego Exposition, and perhaps above all the superb Chapel of the Intercession, from where he was buried, are other monuments to his skill and admirable sense of design and fitness.

Another side of Mr. Goodhue's training was shown in a number of charming houses he designed on the Pacific coast; and in the great Nebraska State Capitol he showed himself ready to break away from the traditional and give us something in a public building original and yet without the least evidence of a desire to depart from the best of good taste. It took courage to submit a design so foreign to the traditional domed structure that has so long been the popular conception of a State building. The result, a building of great dignity and monumental character, will be one of Mr. Goodhue's most notable achievements, and we hope the example he has set will be followed by others. In Washington the beautiful new building of the National Academy of Sciences, designed by Mr. Goodhue, has been recently opened.

Mr. Goodhue was a fellow of the American Institute of Architects, a member of the National Institute of Arts and Letters, and of the Grolier Club, of which he was one of the founders. He was deeply interested in the matter of good typography, and it was to him that we owe the famous Cheltenham type, one of the most used and admired fonts of recent times.

A Who's Who in Architecture

THE American Federation of Arts proposes to publish a "Who's Who in Architecture" as the leading feature of Volume XXI of the "American Art Annual."

This directory will correspond to the "Who's Who in Art," directory of painters, sculptors, illustrators, and etchers, which has appeared in alternate volumes of the "Art Annual" for some years.

The information given will be briefly: name, address, place and date of birth, firm associations, membership in societies, awards, honors or medals, important works; and should provide a record of great value both as immediate information and for future reference.

We sincerely hope that our readers will help make this the valuable reference it promises to be.

The Engineer and the Architect

By William O. Ludlow

Of Ludlow & Peabody, Architects

DANIEL H. BURNHAM, the eminent architect, once said to the people of Chicago: "Beauty is a commercial asset of the first order."

Now, Mr. Burnham was not only an architect but he was an engineer, and also a business man of great ability and keen appreciation of business values.

That there are others who think as did Mr. Burnham is quite evident to any one who passing through Long Island City sees the splendid new factories of the automobile and food companies. As great corporations do not spend either thought or money on the gratification of the æsthetic sense of their presidents and boards of directors, we must believe that the keen business men who put up these buildings believe that it pays to build beautifully as well as practically; in other words, "architecture" is now demanded where twenty years ago anything more than "plain building" was considered a sheer waste of money.

Quite naturally then the engineer who twenty years ago designed factories, pumping-plants, power-plants, disposal works, and the like concerned himself only in putting the most economical walls around his plant and the most economical roof over it, and there are some engineers yet who design buildings who do not fully appreciate the many compelling reasons for the good architectural design of purely utilitarian structures. These engineers claim that their clients do not want any money spent on "architecture."

I would say to such that I believe it is the duty of every engineer and every architect to persuade his client to do everything that the engineer or architect believes will make the project most truly successful.

In the endeavor to persuade the client of the value of good design, perhaps the argument that appeals most strongly is the advertising value of a well-designed building. A good-looking building attracts attention quite as quickly as any other good-looking thing does. It further gives the impression of a prosperous business. It denotes "quality." It gives an air of self-respect, as well as respect for the community about it. It increases property values—its own and adjacent properties. It helps toward an esprit de corps of the employees, as well as doing something toward their individual contentment.

And there is another thing a well-designed building does—but this the engineer or architect does not usually dare to tell his client: it gives the client a personal gratification, a pride in ownership, a satisfaction with himself and with his professional adviser.

That the attractive appearance of a building helps the engineer who is responsible for it is quite obvious. It advertises him quite as much as it does the owner, for it not only draws favorable attention to the building which he has designed, and therefore to himself, but the atmosphere of quality he shares.

Besides all this we have gotten past the period where "appearances don't count." Education, time for recreation, cultivation of the finer things of life—literature, music, art—these have created a demand for refined building, and the engineer cannot afford to ignore this demand.

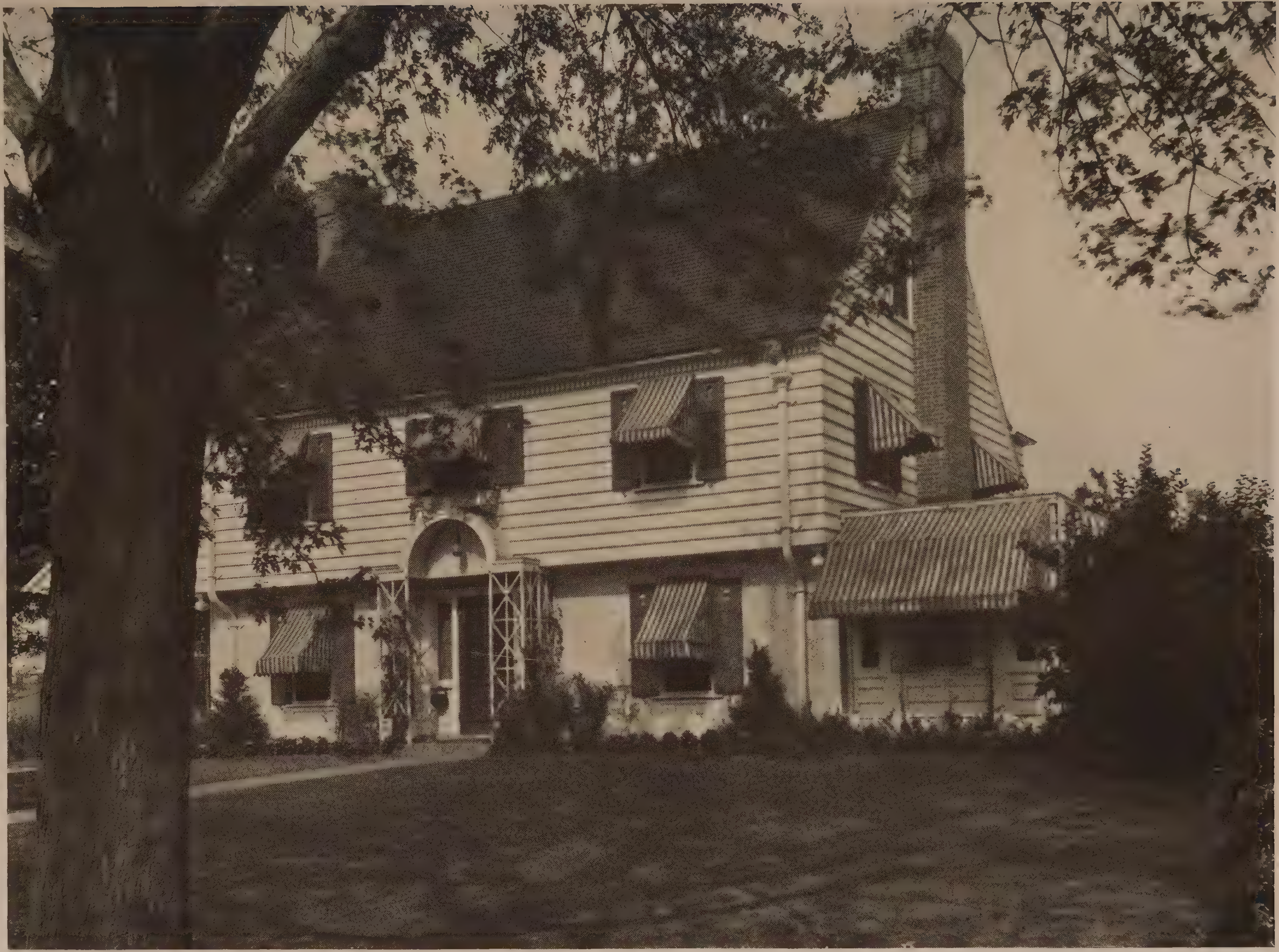
But admitting this, the practical difficulty often is that the engineer is not trained to design architecturally, he has never studied proportion, mass, and color, and therefore doesn't know how to make his building good-looking. Now it is this study that is exactly what he needs if his practice entails building of any kind, be it a bridge or dam, a retaining wall, a water-tower, or a factory. Not that he should have the long training required of an architect, but he should take as part of his engineering education such a course in design as will enable him at least to appreciate the elements of good design and cultivate a correct critical faculty. This will make it possible for him to take care of the simple problems in his own office with the assistance of competent draftsmen, and will lead him to seek the co-operation of an architect for important work.

The converse of this relation of engineer and architect, that is to say, the calling in by the architect of the engineer for all buildings requiring engineering, has already made a fine spirit of co-operation between architect and engineer. They have each come to appreciate better the view-point of the other, and have learned to work together in such harmony of purpose and in such good understanding that buildings are much better than they used to be.

I am, therefore, firmly convinced that for buildings for purely engineering or manufacturing purposes, for bridges, dams, or other utilitarian structures, if the engineer seeks the collaboration of the architect in order that the work may be pleasing in color, proportion, and mass, the engineer will not only be helping himself professionally, but the interests of the owner will be most truly served.

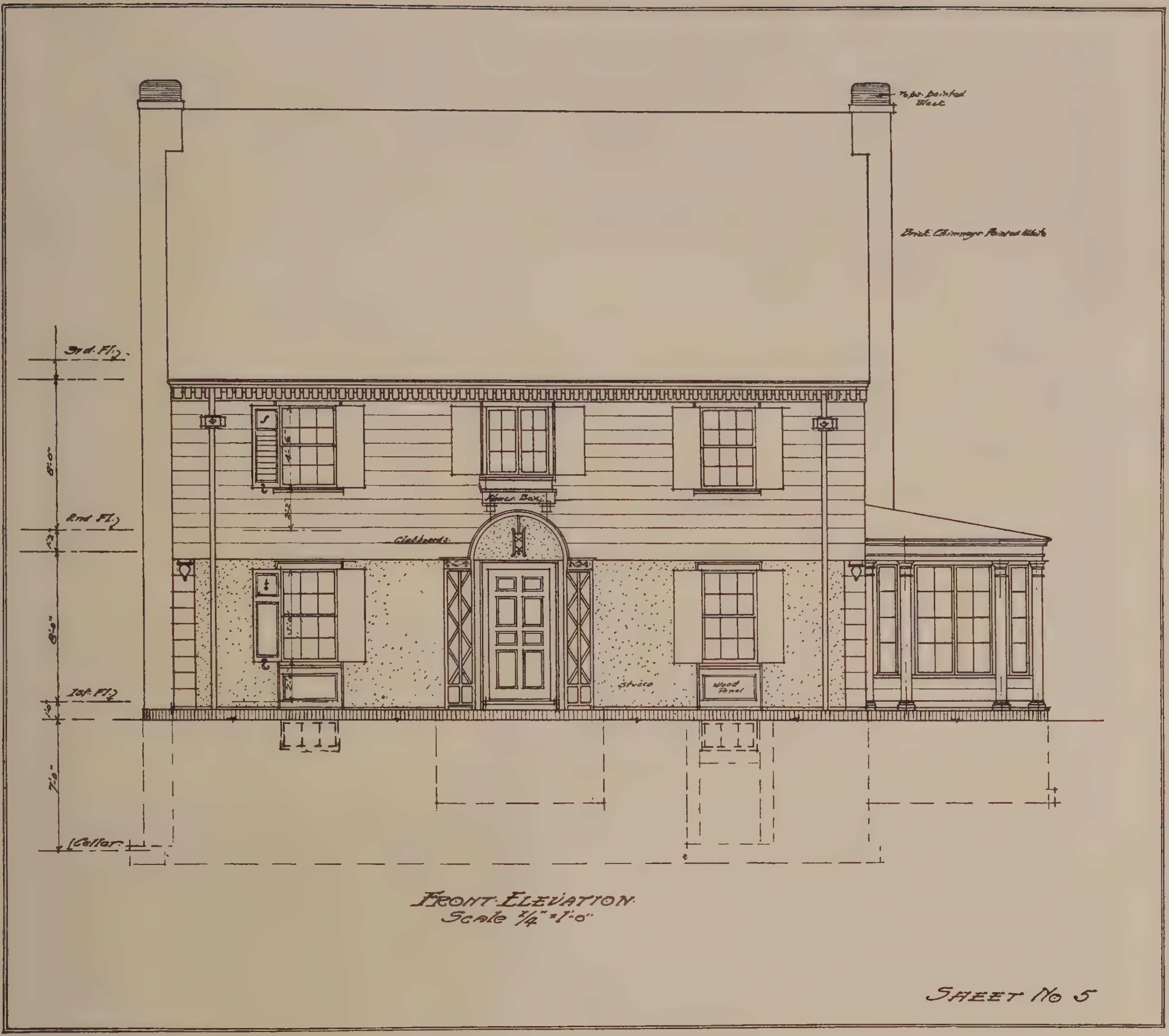
And he will be serving a wider interest—the interest of people generally, and everywhere. Just as slovenly dress detracts from a man's own self-respect and the respect of his neighbors for him, so are crude buildings related to manners and morals. Who will not admit that the appearance of a man's home has a good deal to do with the attitude of the man toward his home and his family? Who will not admit that the appearance of the school building has something to do with the proper education of the child, or that the appearance of the factory and its surroundings has something to do with the quality of mind of the employees and, therefore, with the quality of work they produce?

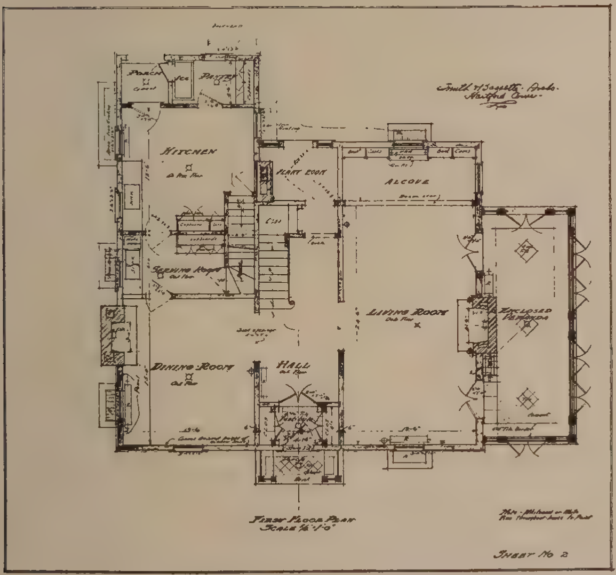
It seems to be in the Creator's scheme of things to make everything beautiful—Nature is always beautiful when not disturbed by man, and everywhere that man disfigures Nature she sets to work immediately to heal the scars. And so good ethics as well as good business seem to confirm my thesis; and I am not so sure but that good business and good ethics usually do go hand in hand.

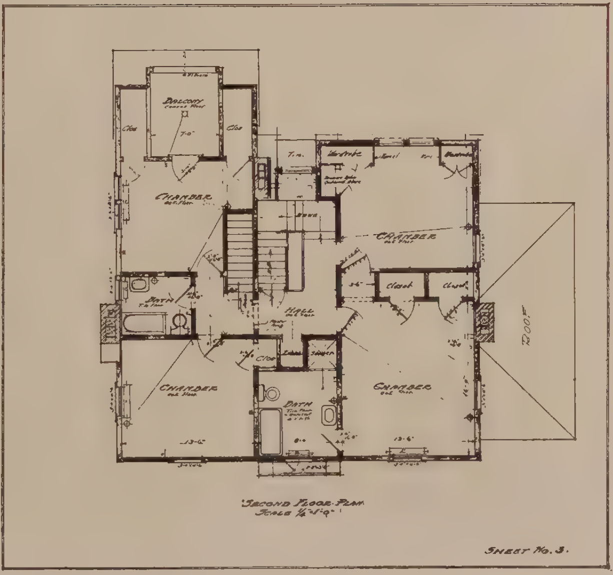


RESIDENCE, W. W. FRAYER, NEW BRITAIN, CONN.

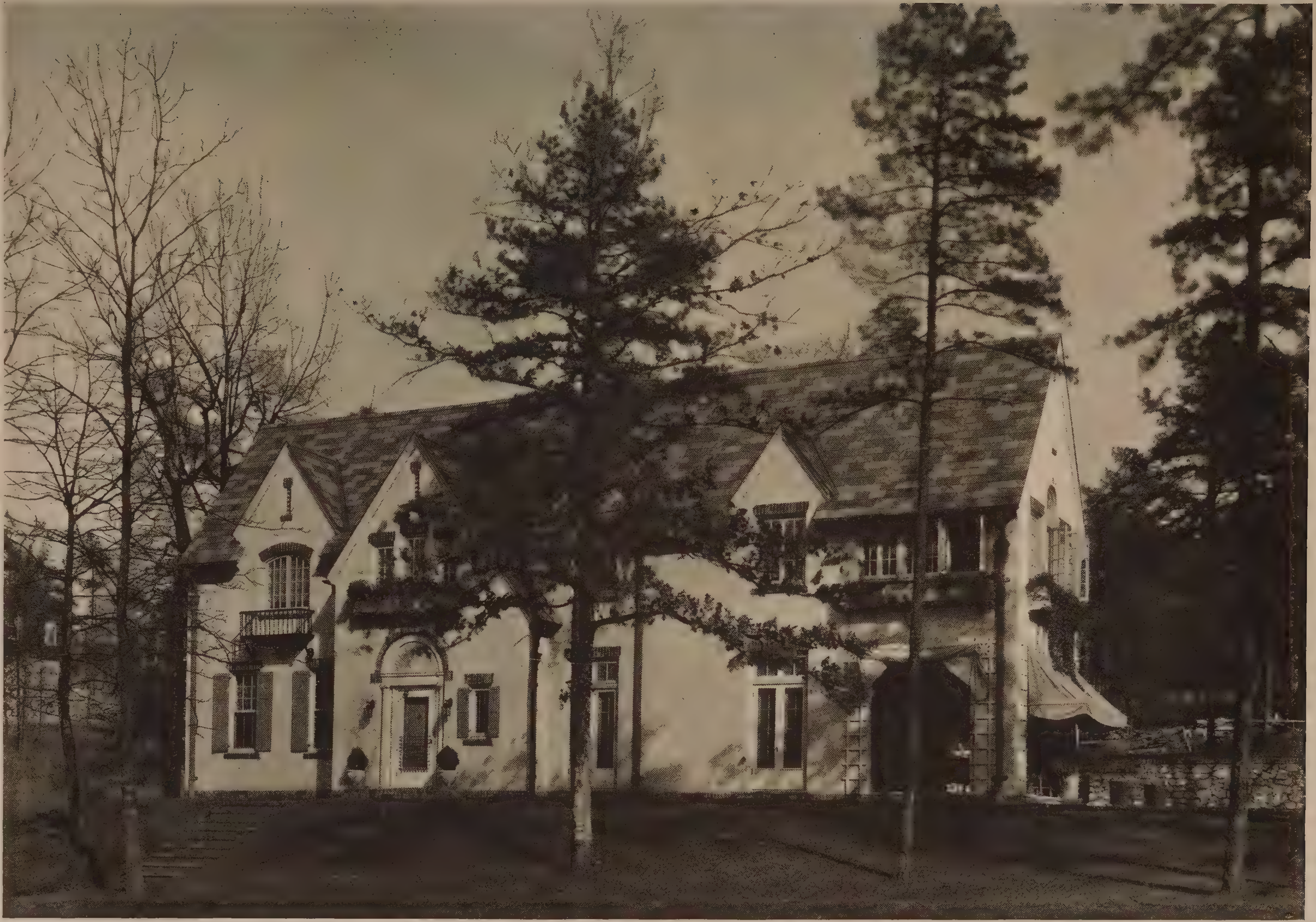
Smith & Bassett, Architects.





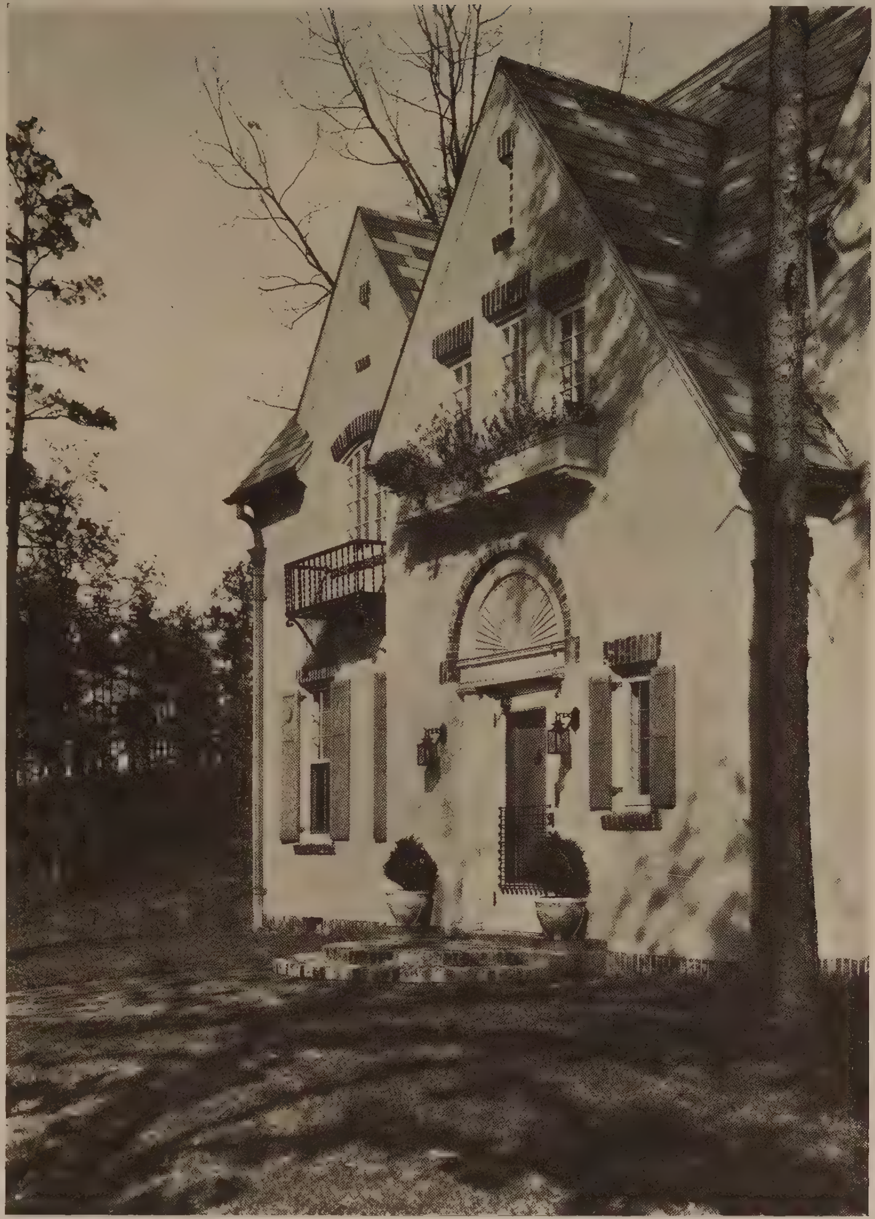


ELEVATION AND PLANS, RESIDENCE, W. W. FRAYER, NEW BRITAIN, CONN. Smith & Bassett, Architects.



RESIDENCE, E. T. WILLIAMS, BIRMINGHAM, ALA.

Warren, Knight & Davis, Architects.



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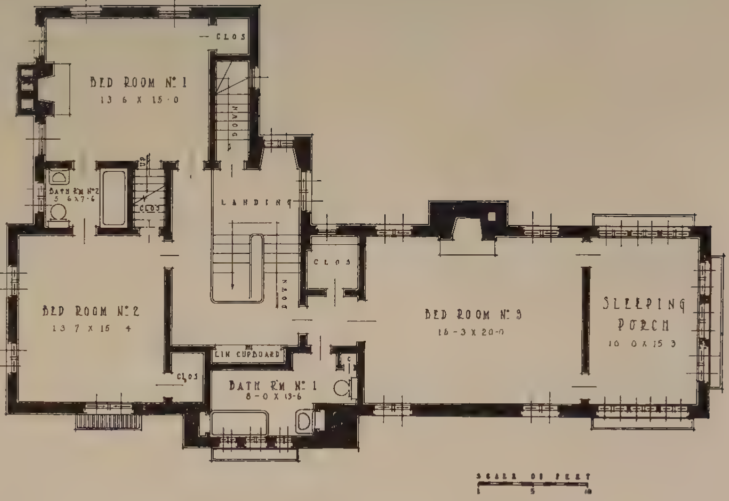
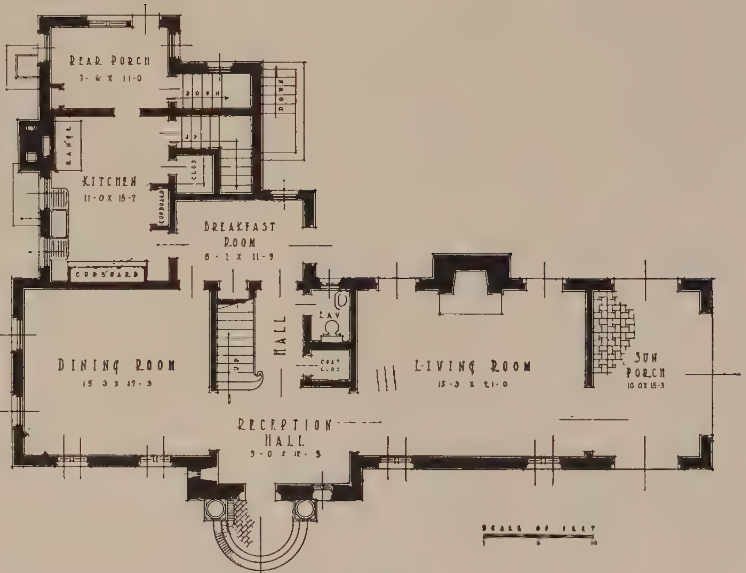
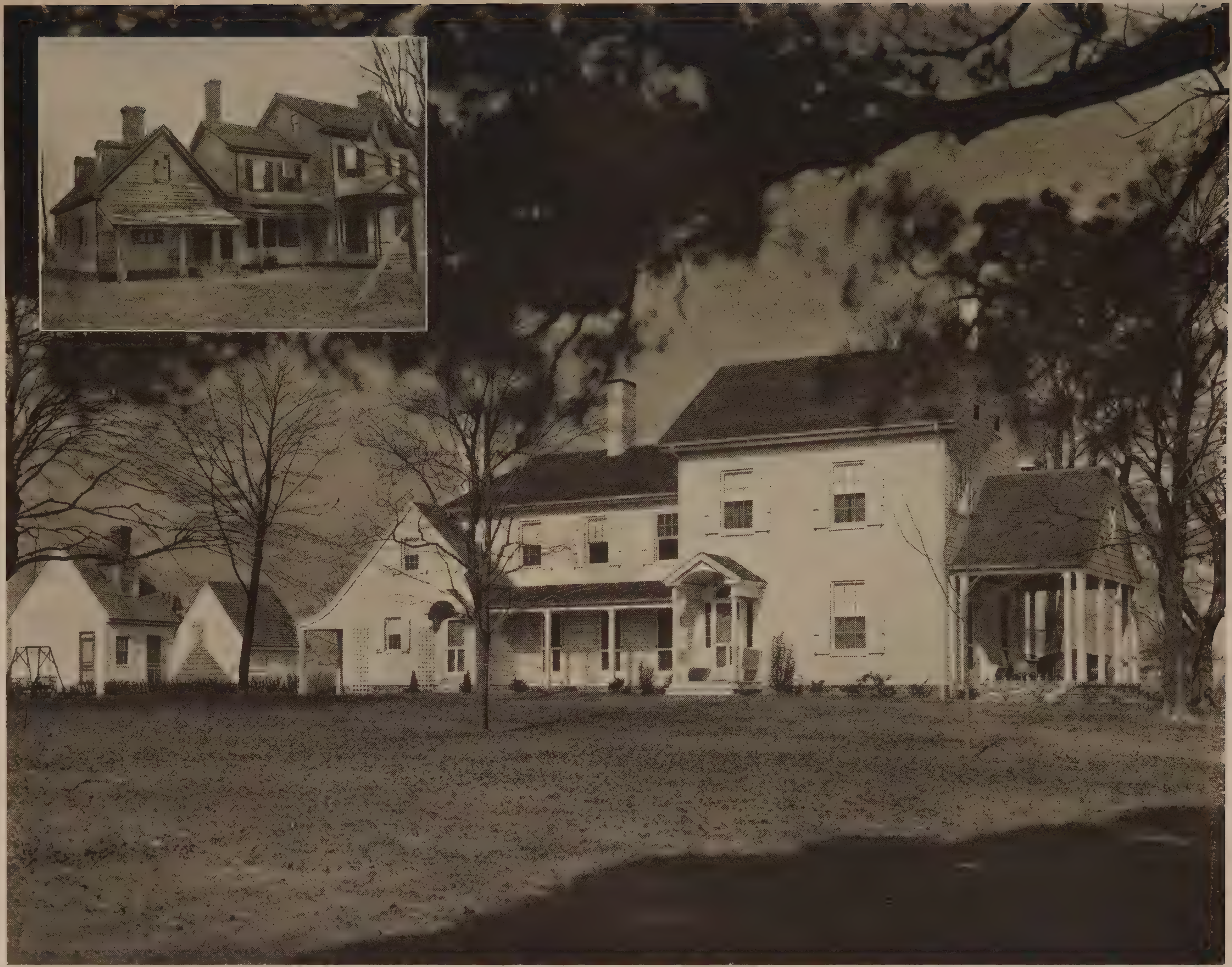


·SECOND·FLOOR·PLAN·



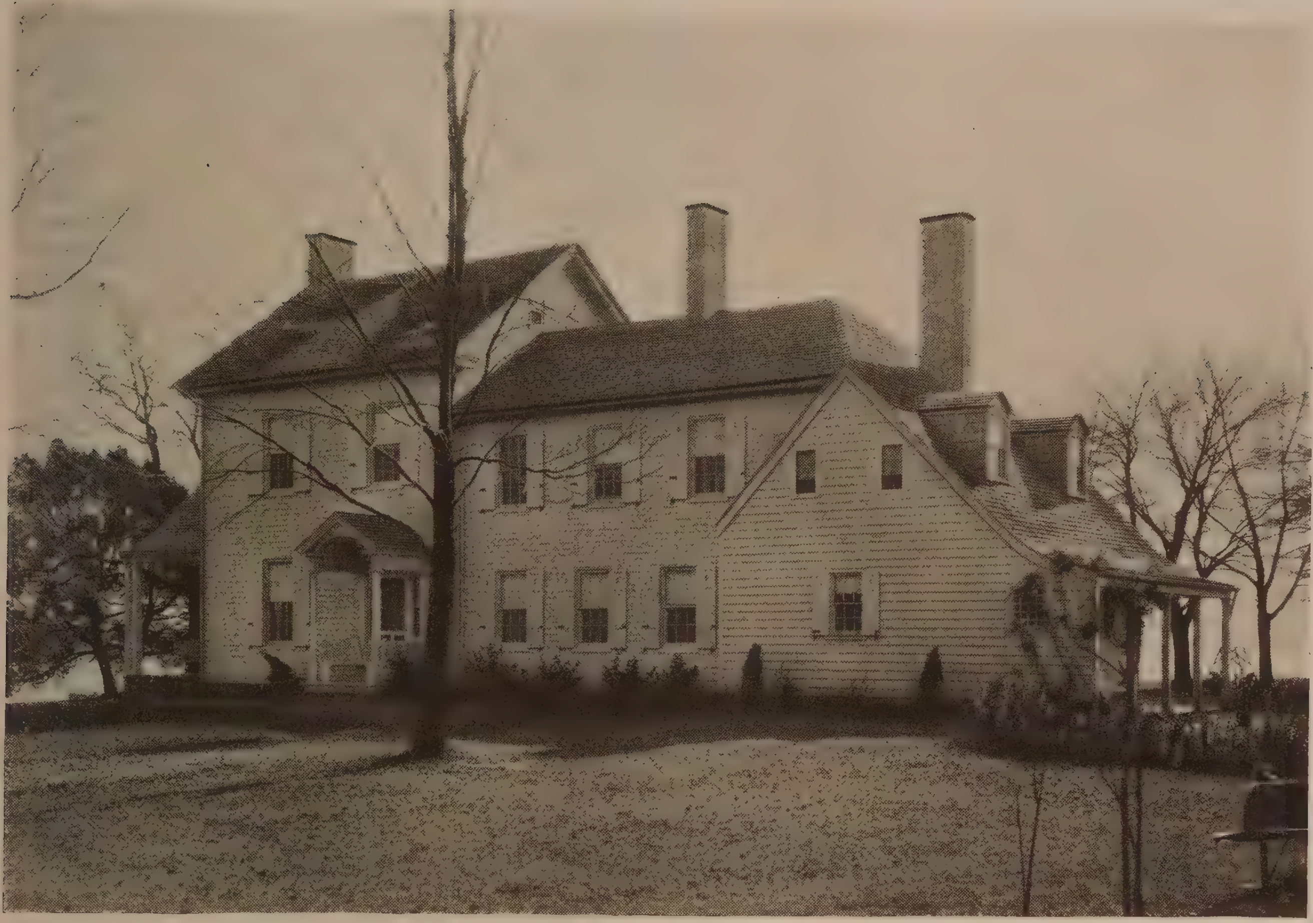
·FIRST·FLOOR·PLAN·

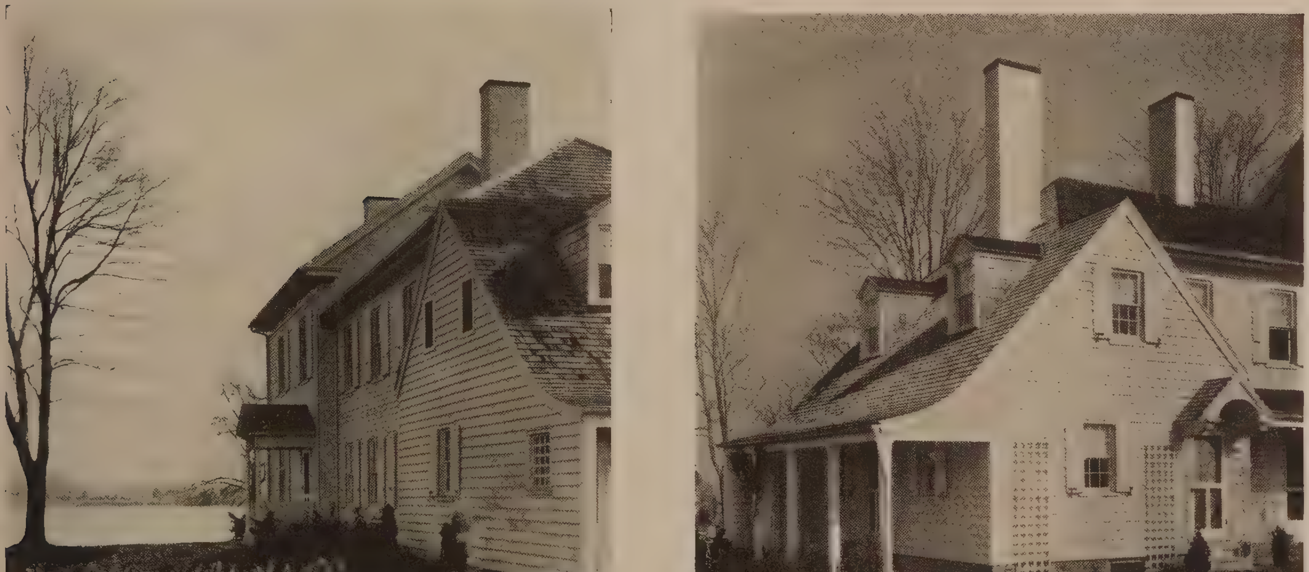
Warren, Knight & Davis, Architects.



ALTERATIONS TO "AUBURN," RESIDENCE, BARCLAY H. TRIPPE, EASTON, MD.

Henry P. Hopkins, Architect.





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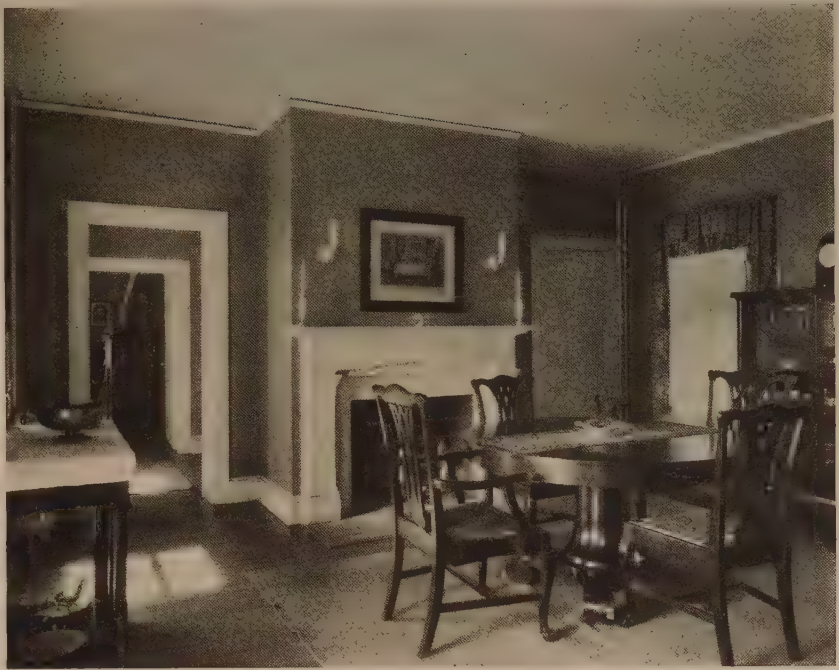
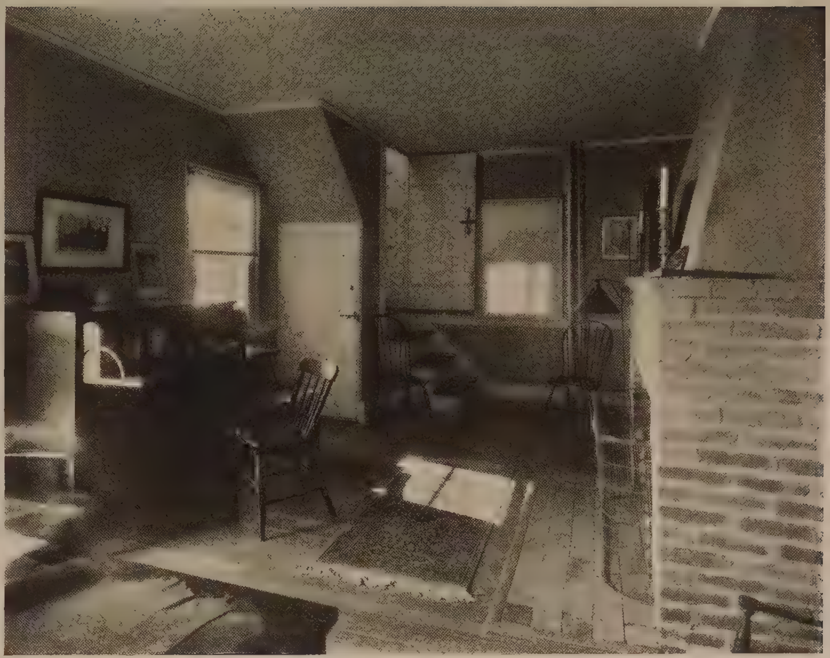


DINING-ROOM.



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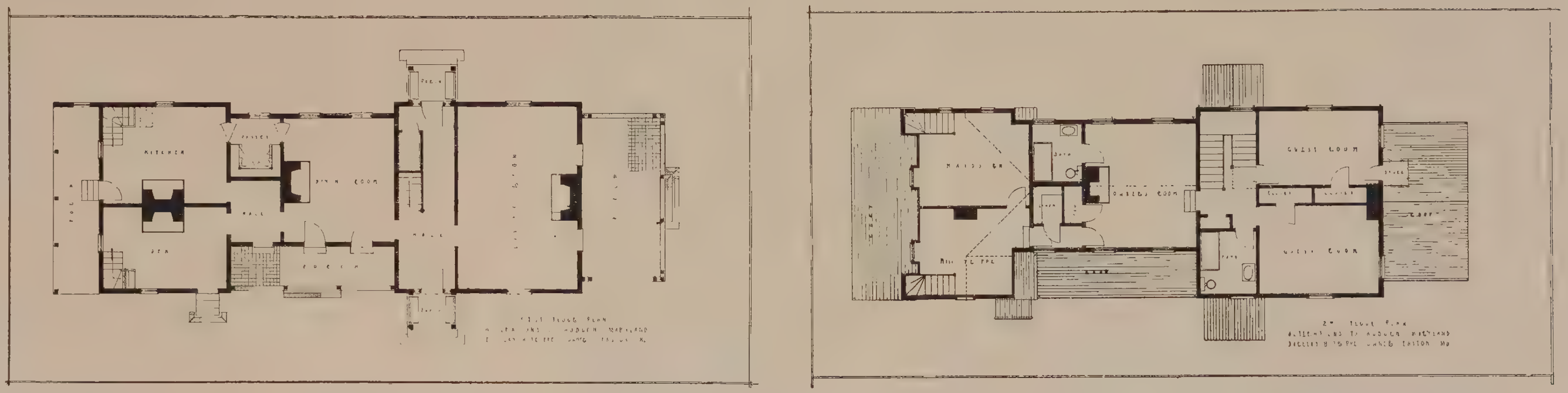

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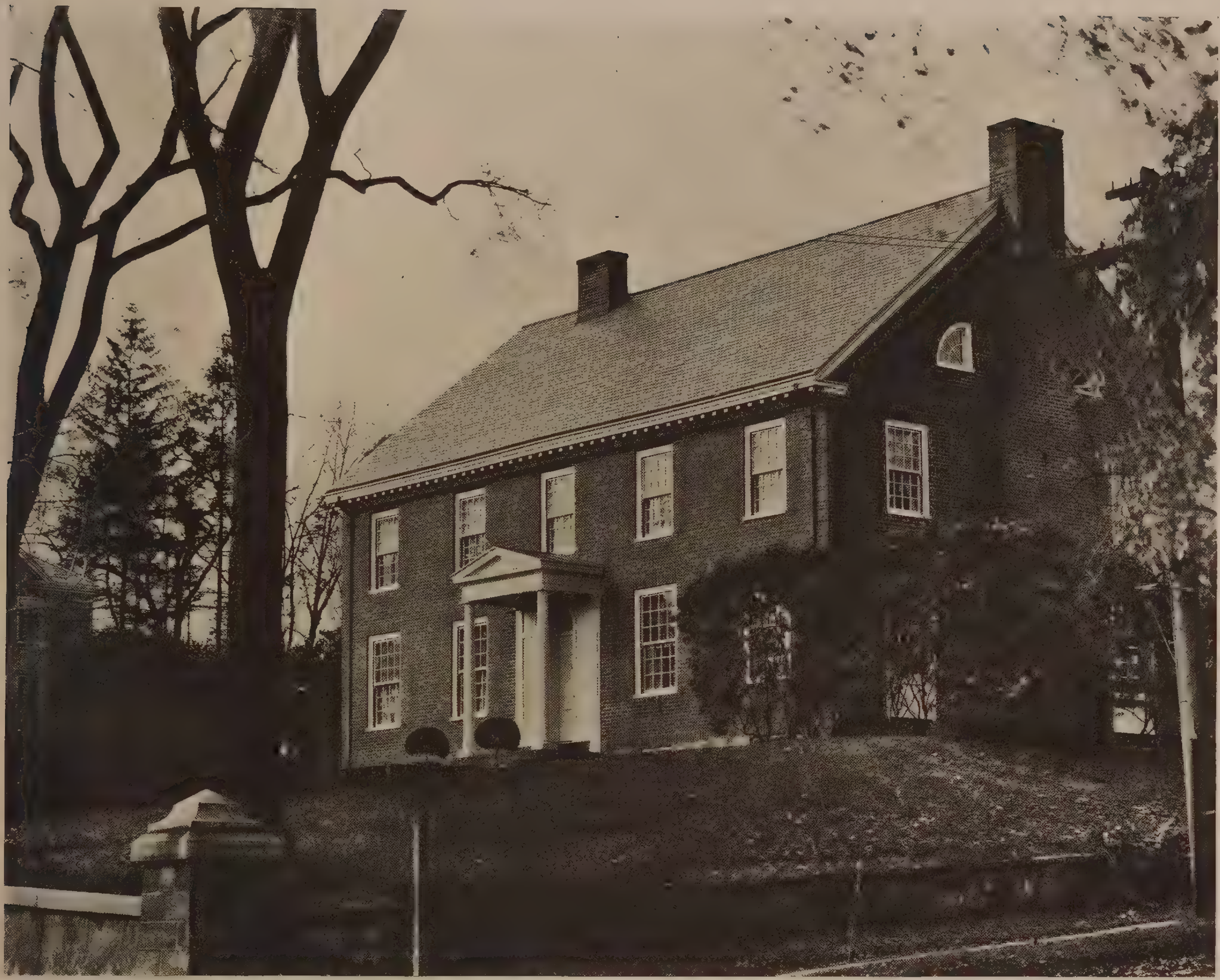
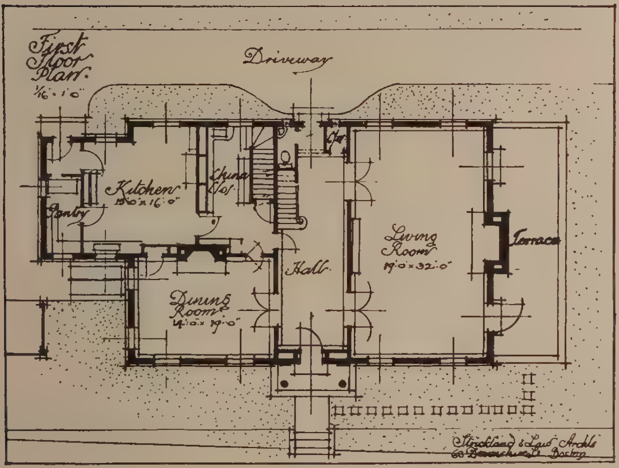
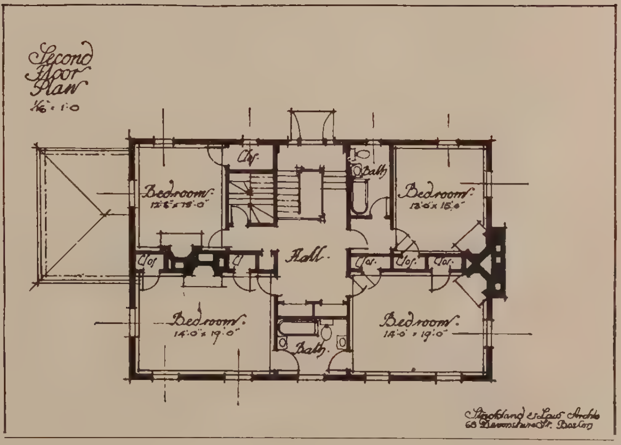
Henry P. Hopkins, Architect.

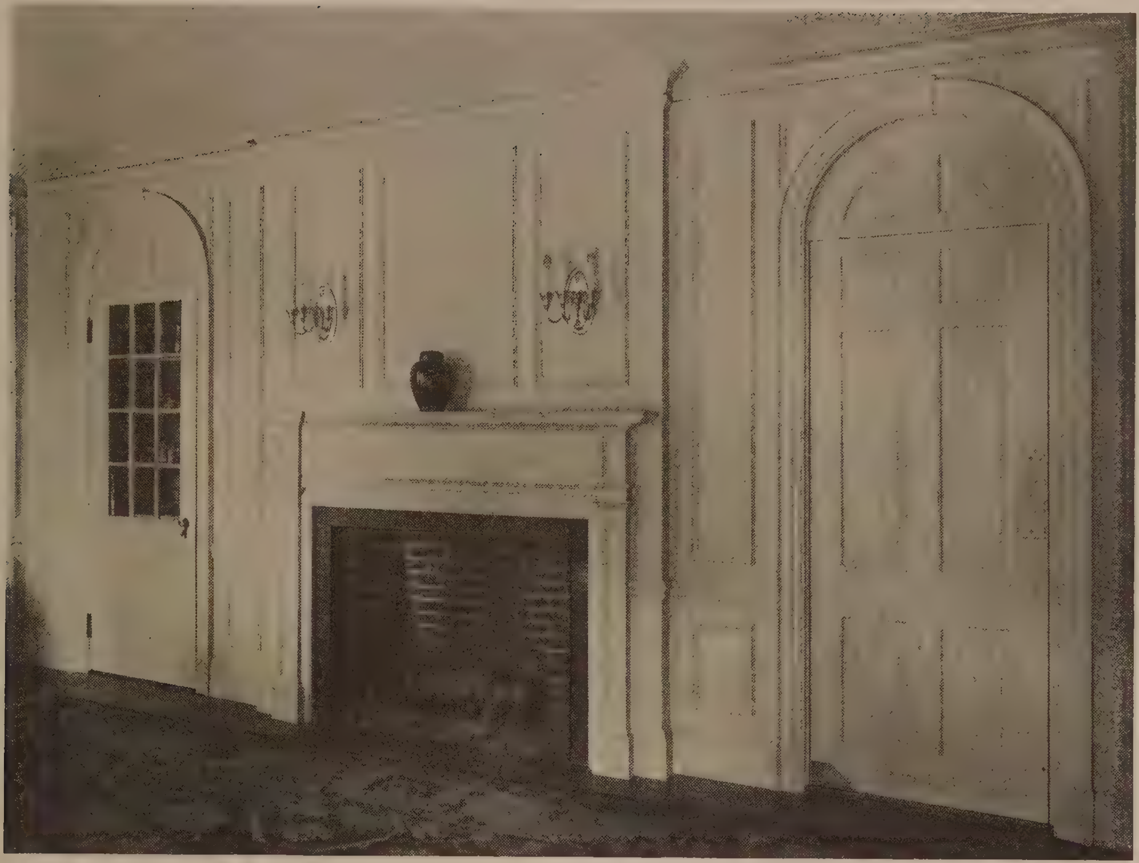






RESIDENCE, AT BROOKLINE, MASS.

Strickland, Blodget & Law, Architects.



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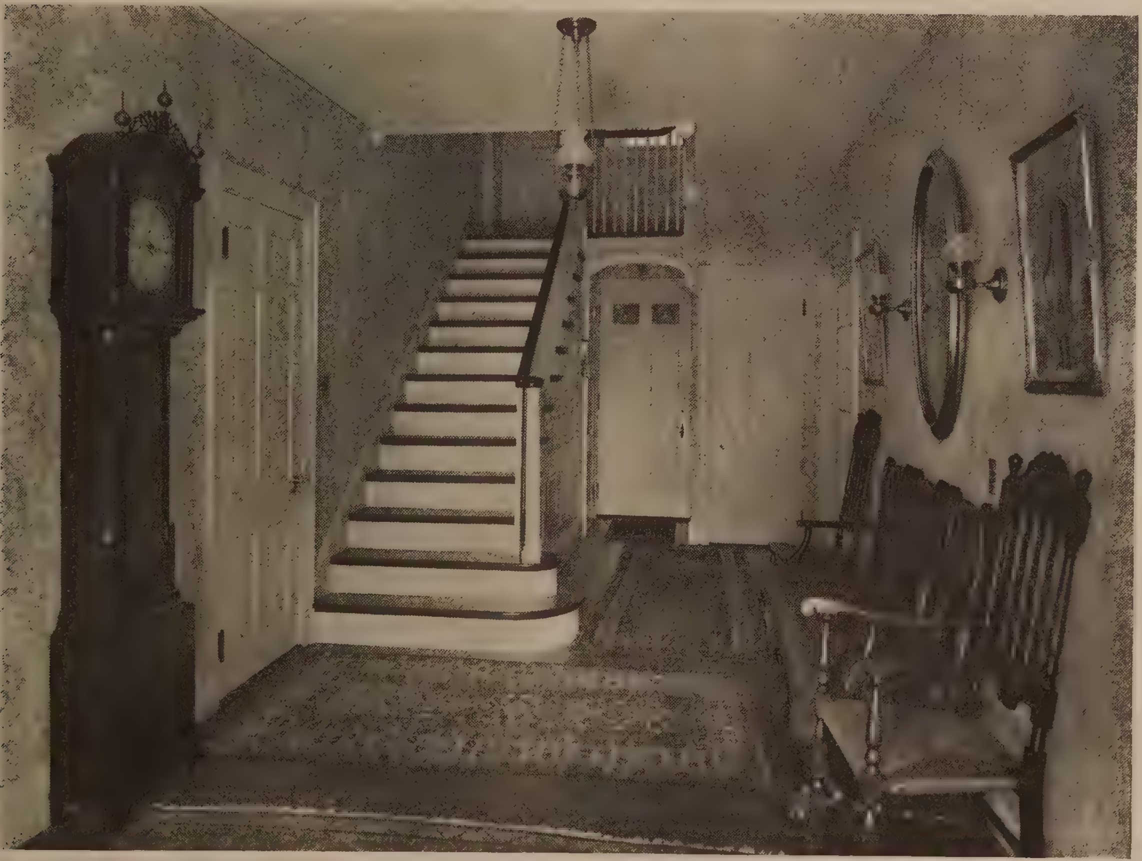
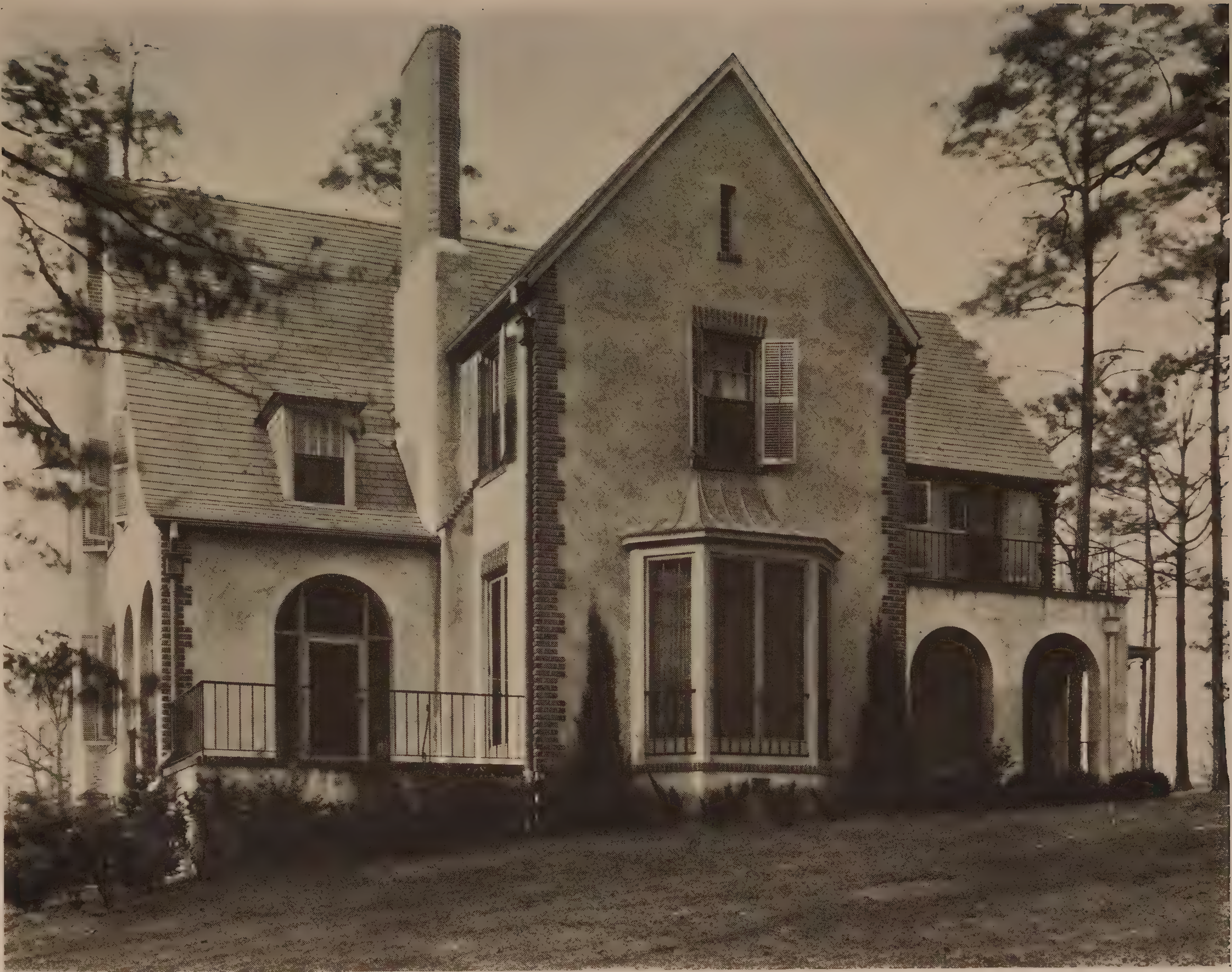
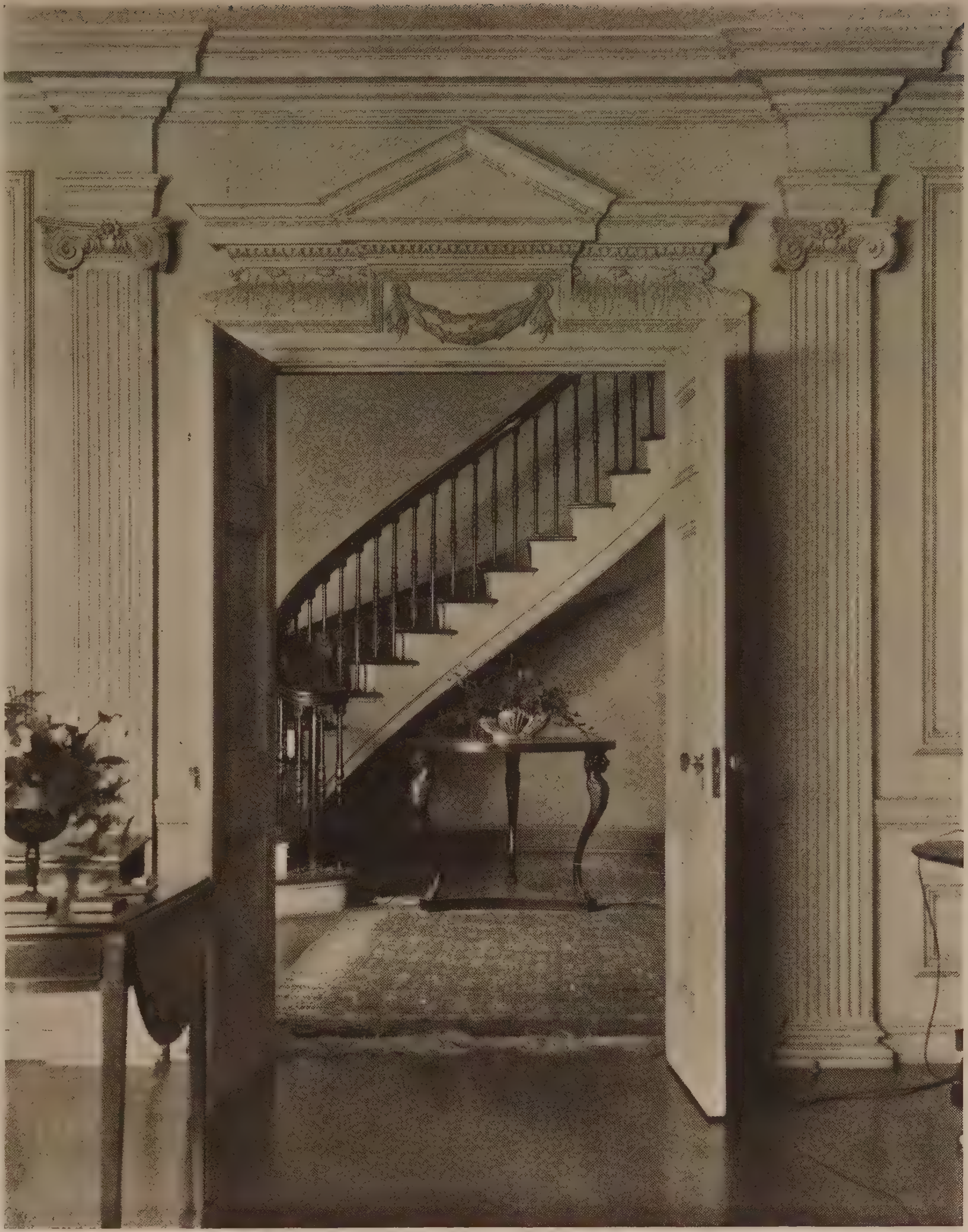


HALL AND STAIRCASE. RESIDENCE, BROOKLINE, MASS. Strickland, Blodget & Law, Architects.

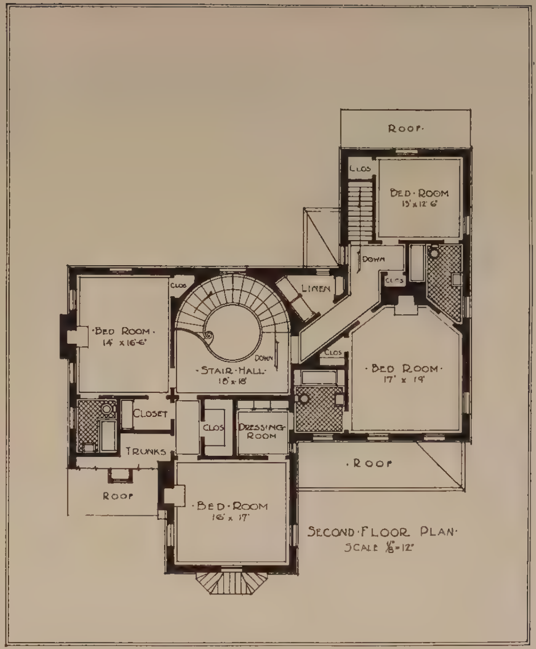


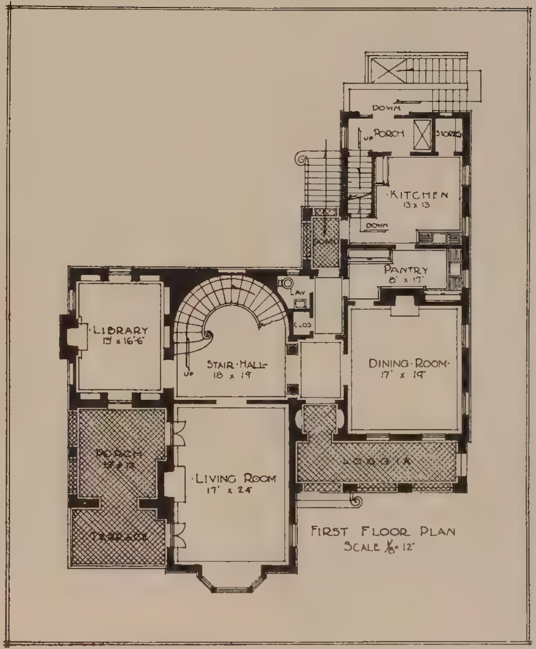
RESIDENCE, J. CARROLL PAYNE, ATLANTA, GA.

Hentz, Reid & Adler, Architects.

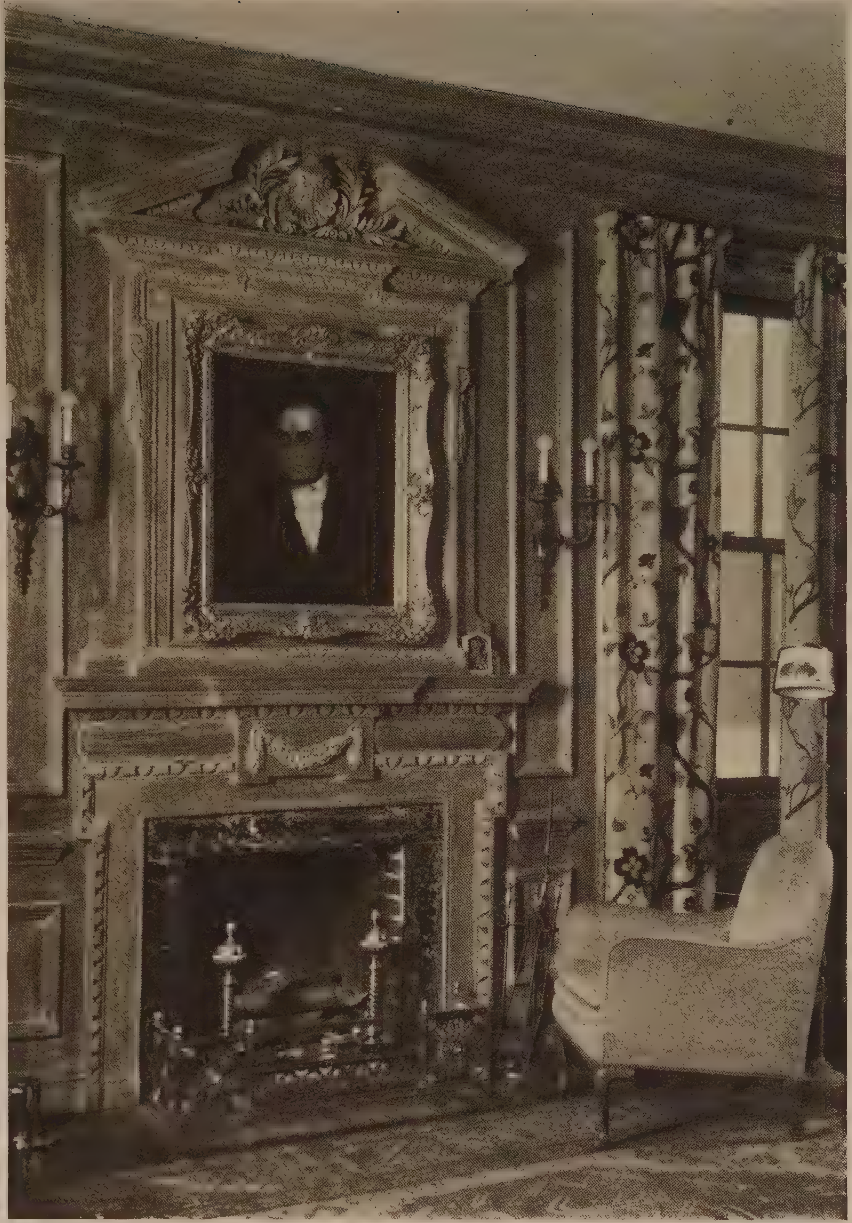


LIVING–ROOM, TOWARD HALL, RESIDENCE, J. CARROLL PAYNE, ATLANTA, GA.

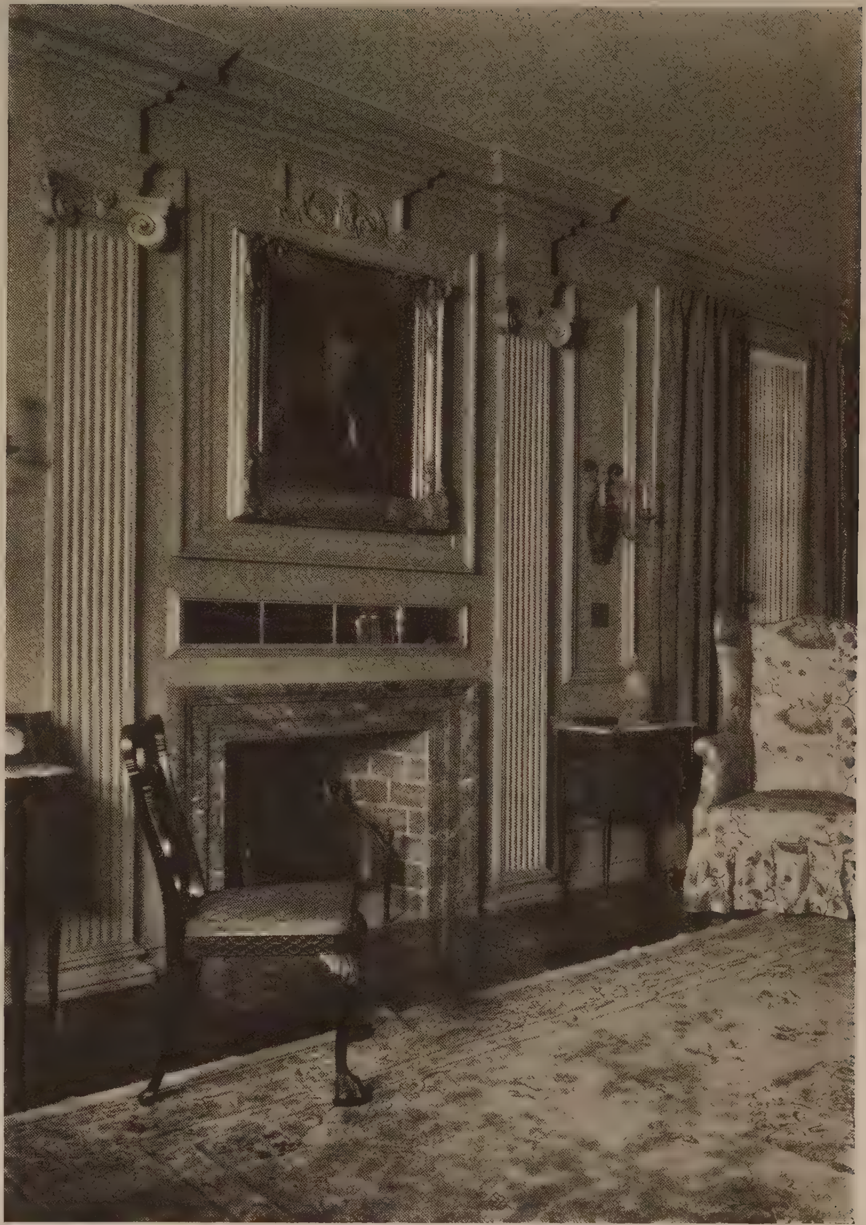




Hentz, Reid & Adler, Architects.



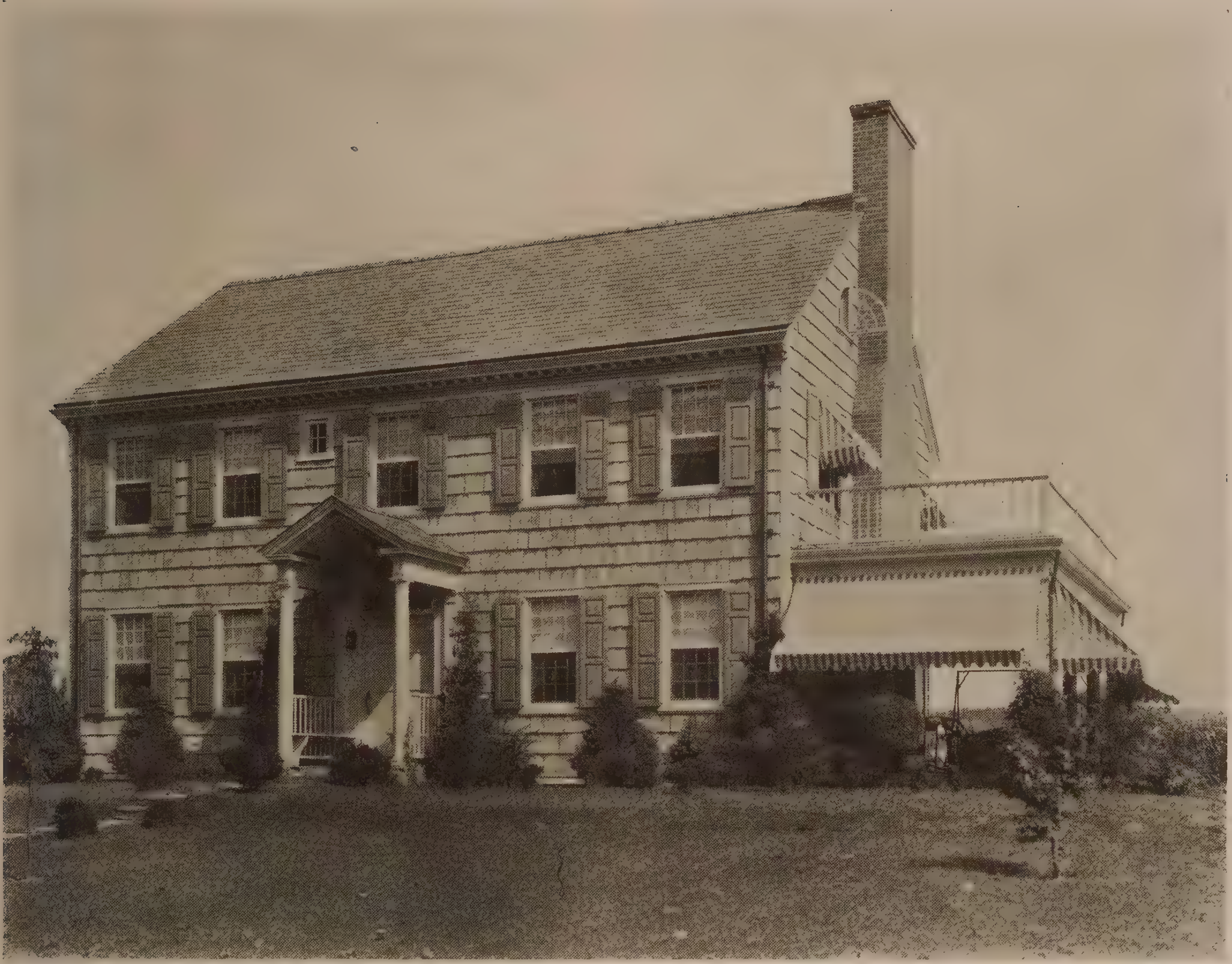
LIBRARY.

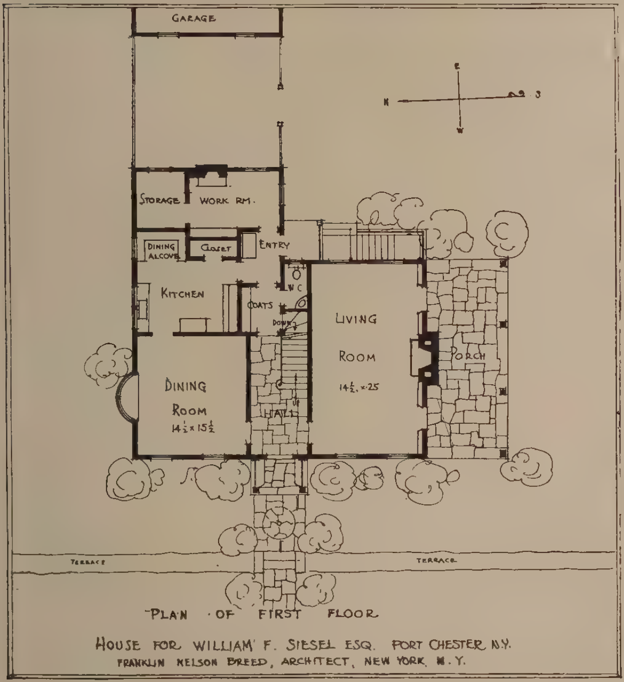


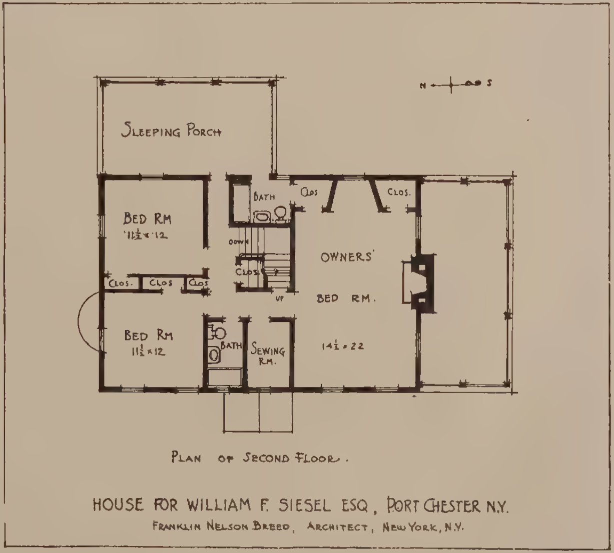
LIVING–ROOM.

Hentz, Reid & Adler, Architects.

RESIDENCE, J. CARROLL PAYNE, ATLANTA, GA.

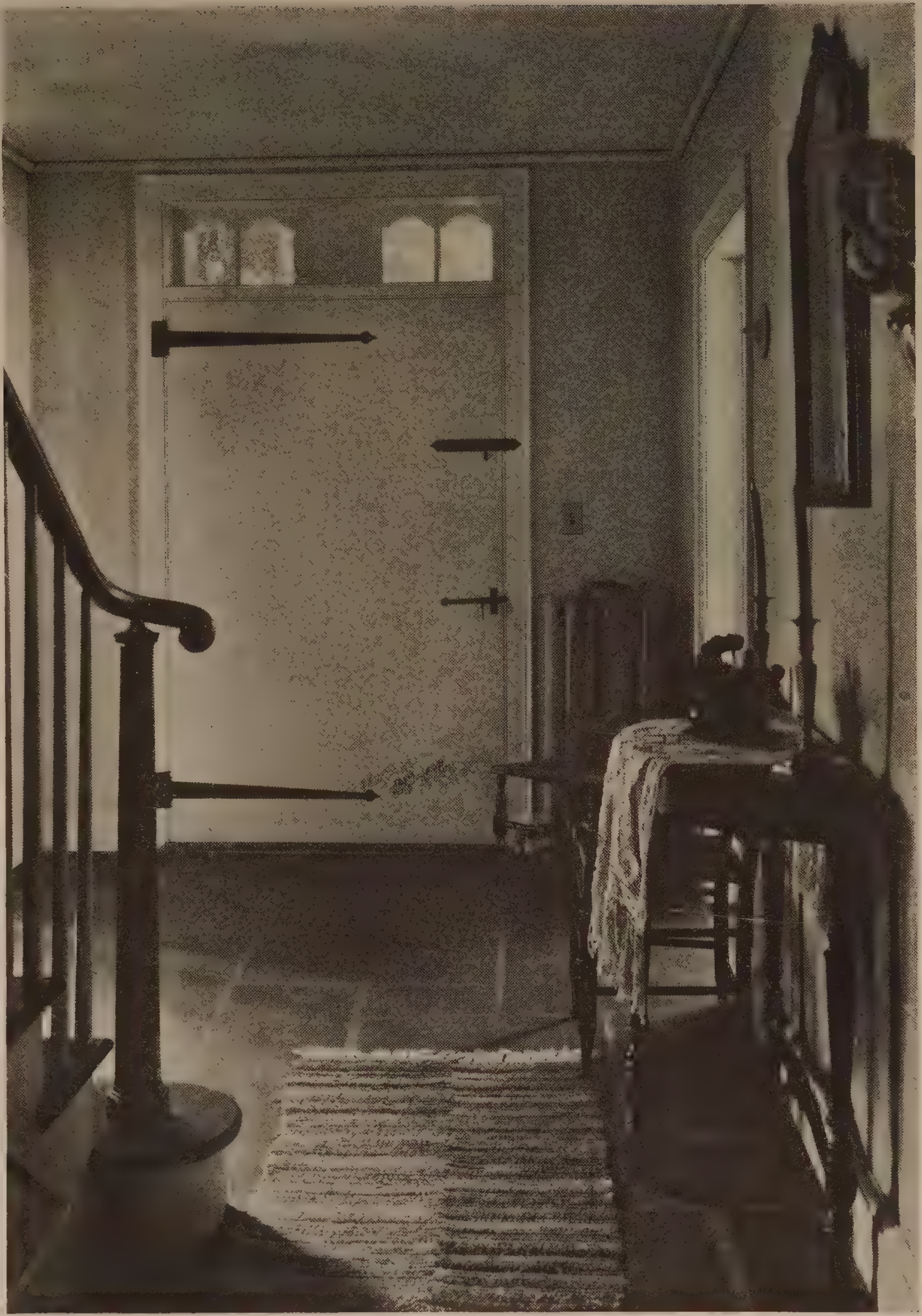




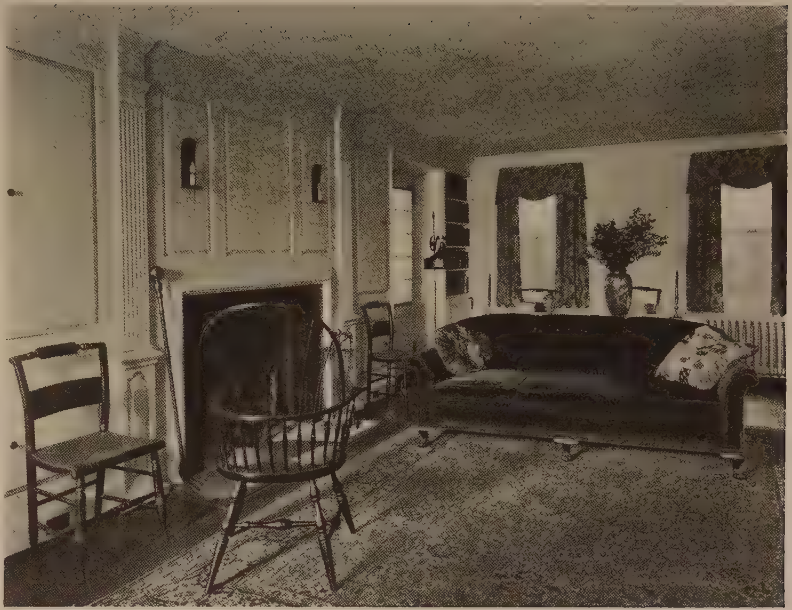


RESIDENCE, WM. F. SIESEL, PORT CHESTER, N. Y.

Franklin Nelson Breed, Architect.



HALL.



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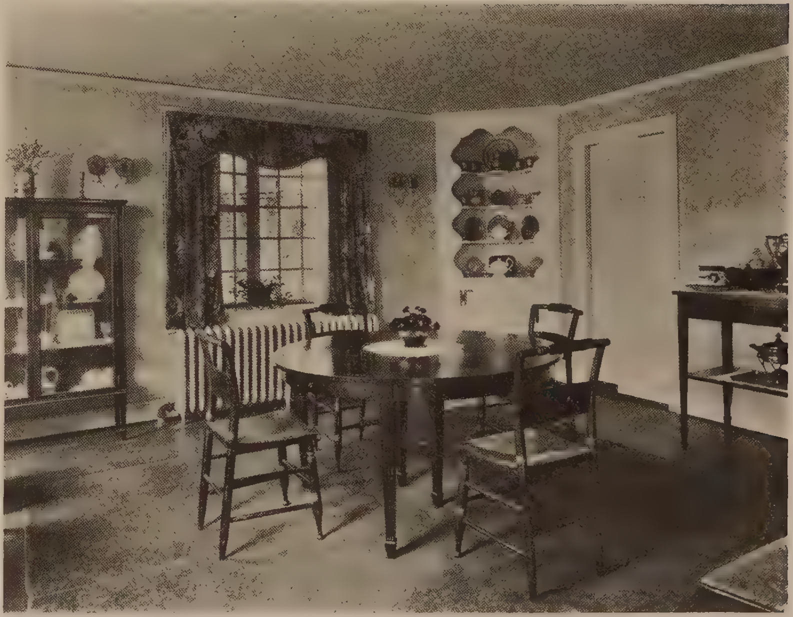
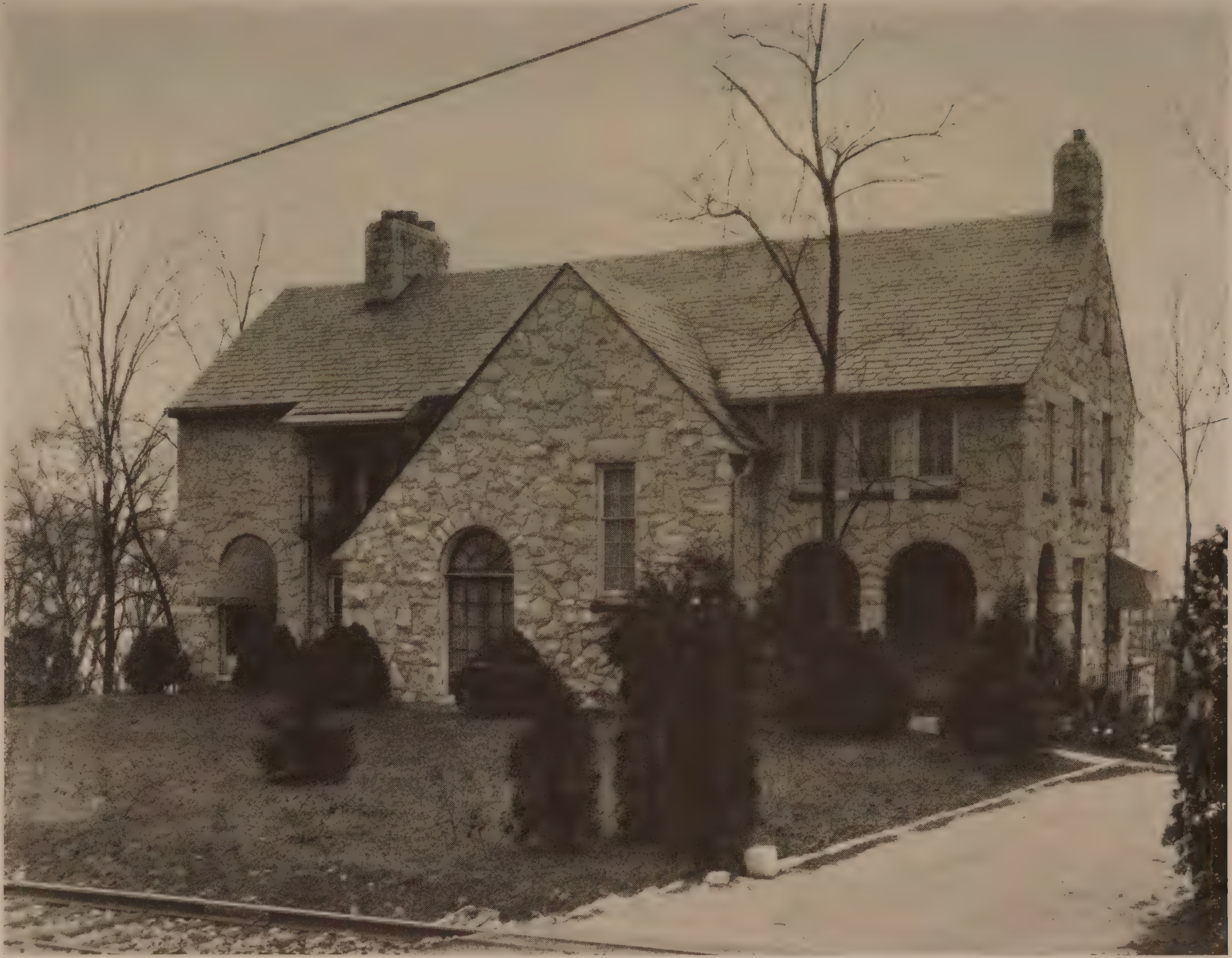


DINING–ROOM.

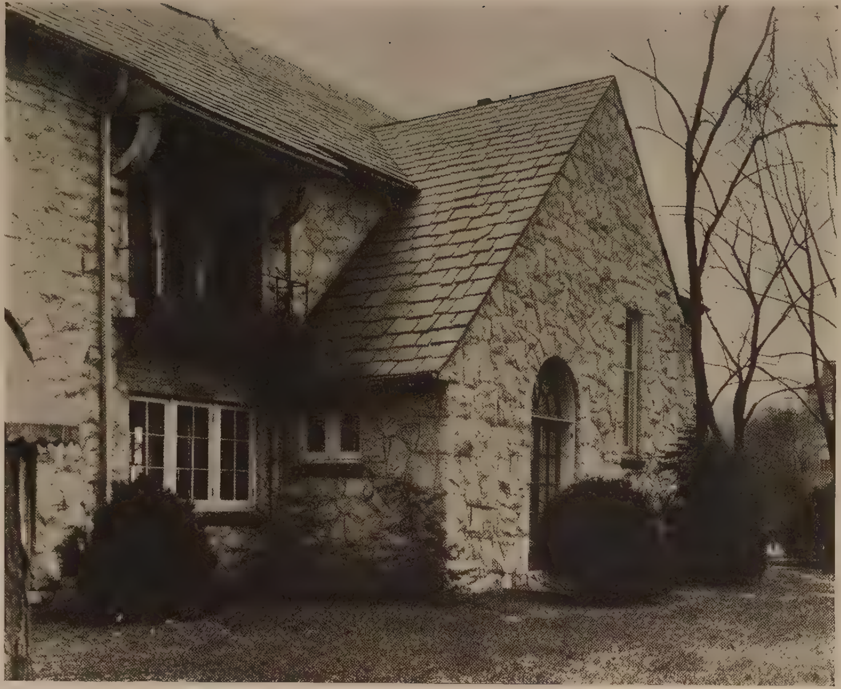
Franklin Nelson Breed, Architect.

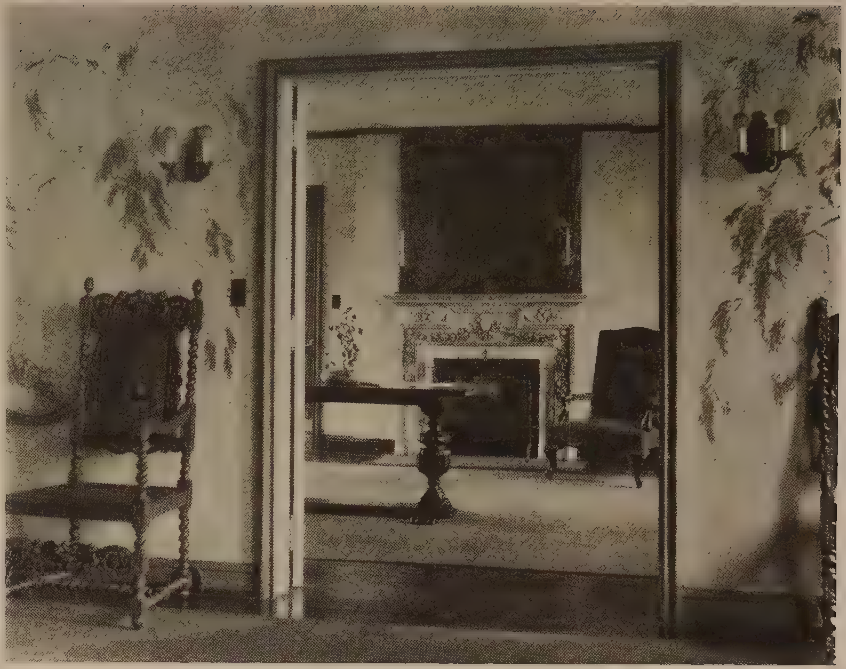
RESIDENCE, WM. F. SIESEL, PORT CHESTER, N. Y.

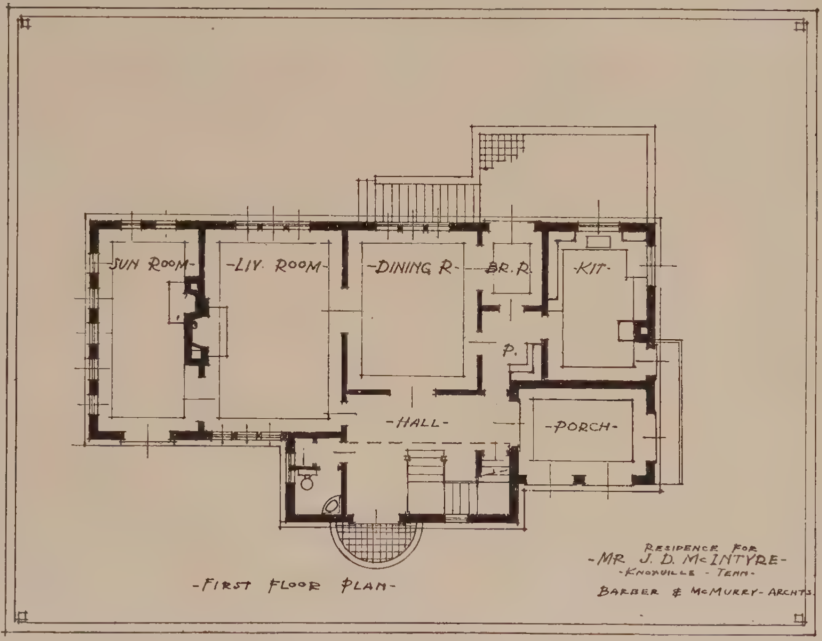


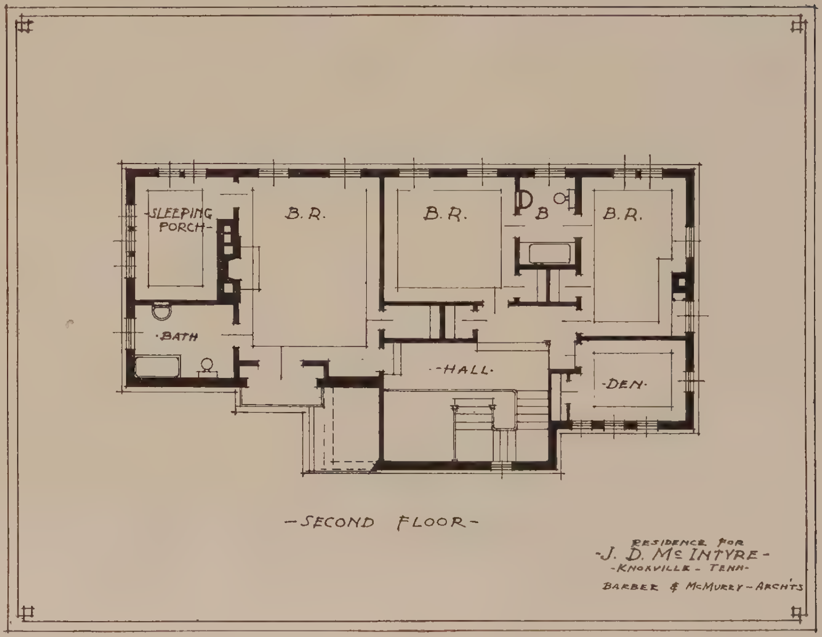
RESIDENCE, J. D. McINTYRE, KNOXVILLE, TENN.

Barber & McMurry, Architects.









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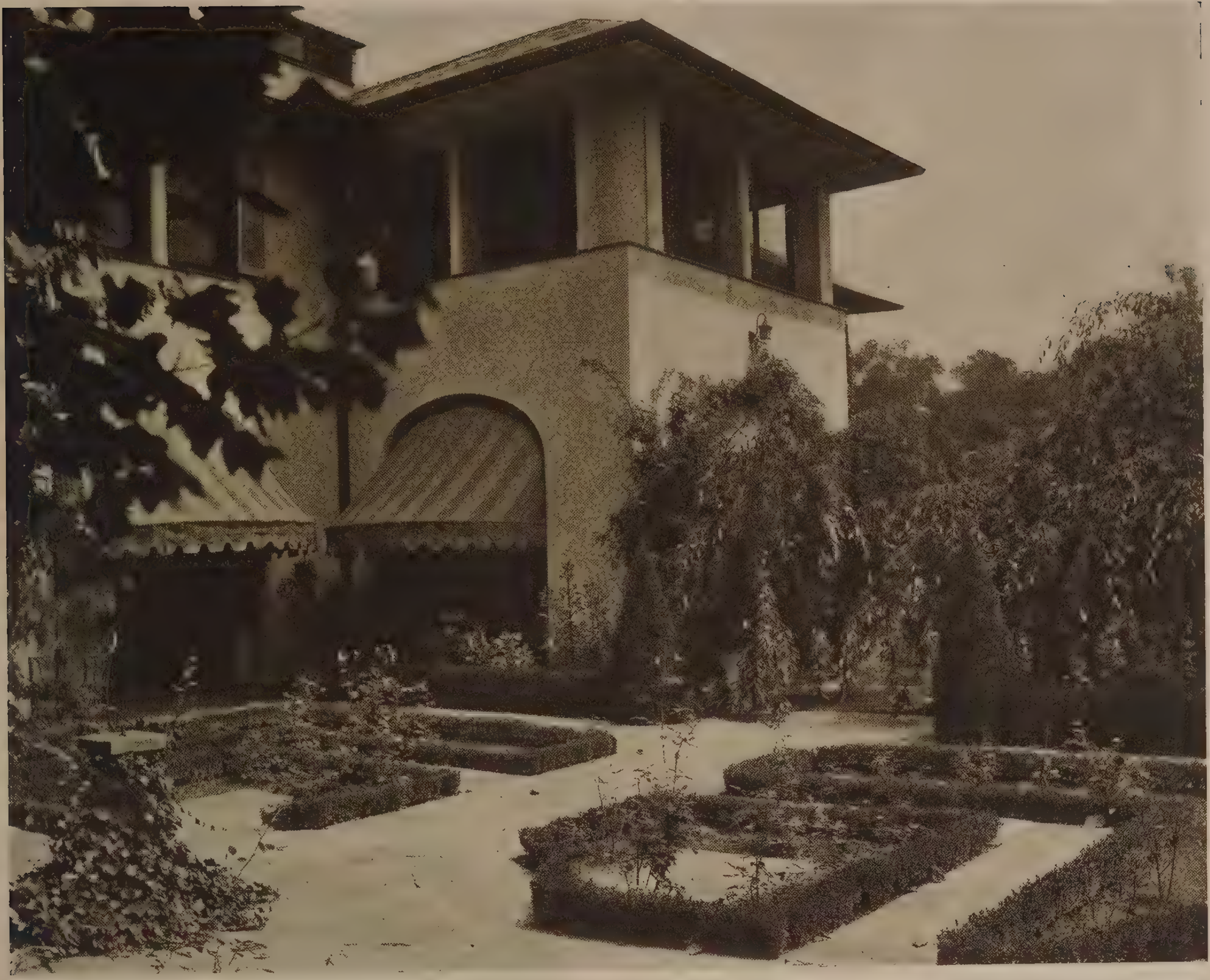
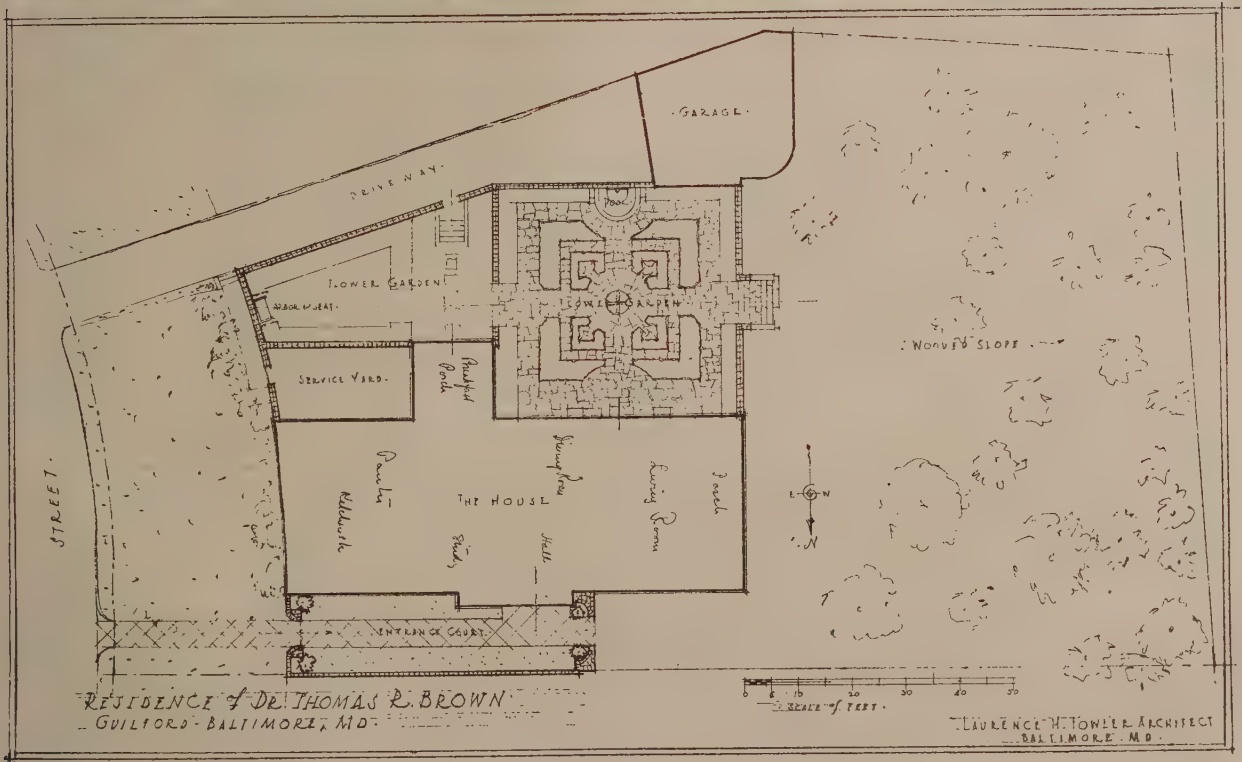
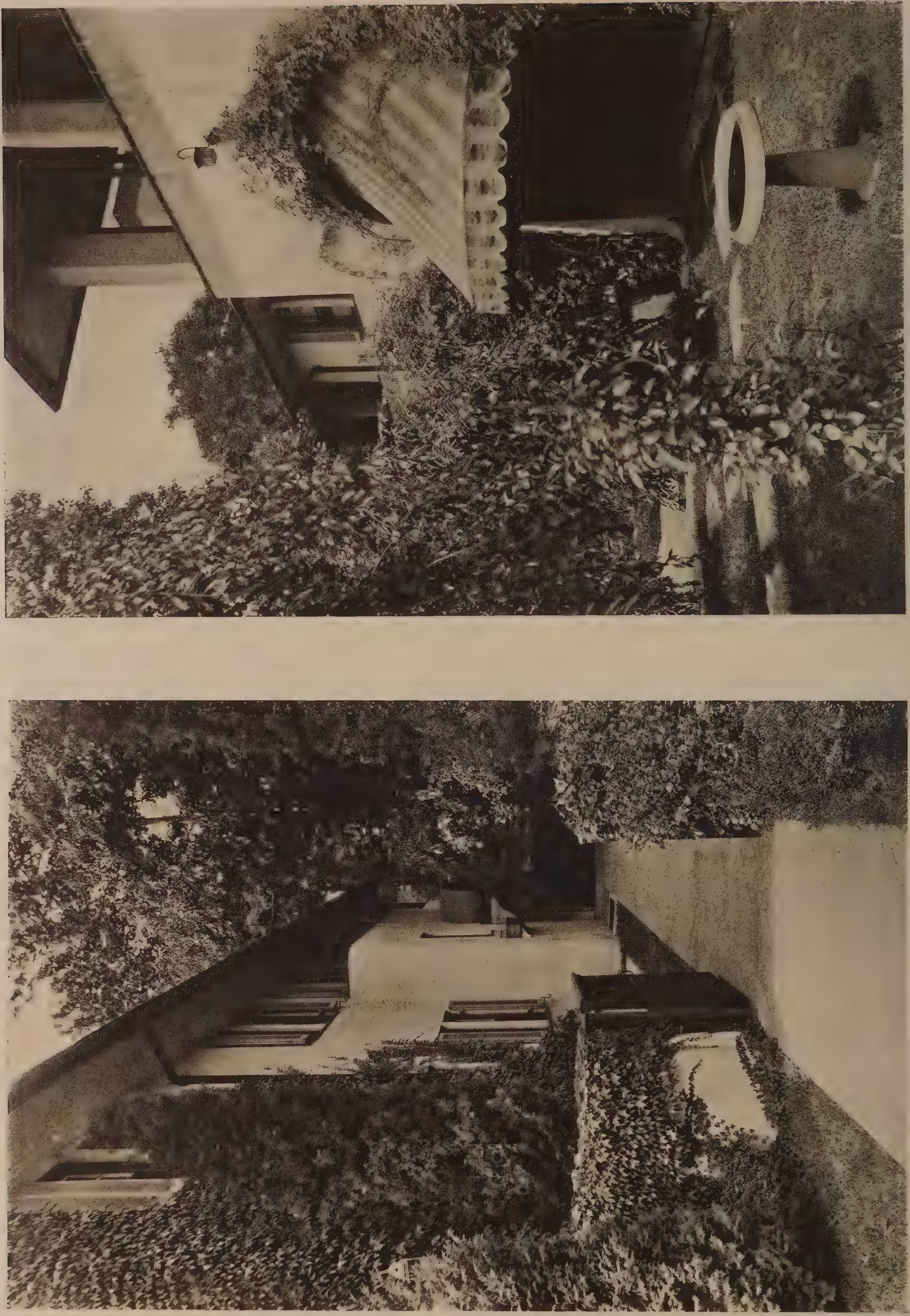




RESIDENCE, DR. THOMAS R. BROWN, GUILFORD, BALTIMORE, MD. Laurence H. Fowler, Architect.



RESIDENCE, DR. THOMAS H. BROWN, GUILFORD, BALTIMORE, MD.

Laurence H. Fowler, Architect.

Model of Residence, Robert M. Haig, Riverdale, N. Y. Julius Gregory, Architect. George Pearse Ennis, Painter.

Safe Construction of Built-in Garages Explained by Commerce Department

"MOTORISTS who keep their cars in built-in garages, or garages attached directly to the side of their dwellings do not run an undue fire risk if they follow certain elementary precautions," states Mr. Ira H. Woolson, chairman of the Building Code Committee of the Department of Commerce, and consulting engineer of the National Board of Fire Underwriters, in an interview recently given out. "We covered the subject of built-in garages for one and two family houses quite thoroughly in the 'Recommended Minimum Requirements for Small Dwelling Construction,' that has just been published by the Department of Commerce," states Mr. Woolson, "and gave directions for constructing them safely, that can be followed by any competent builder.

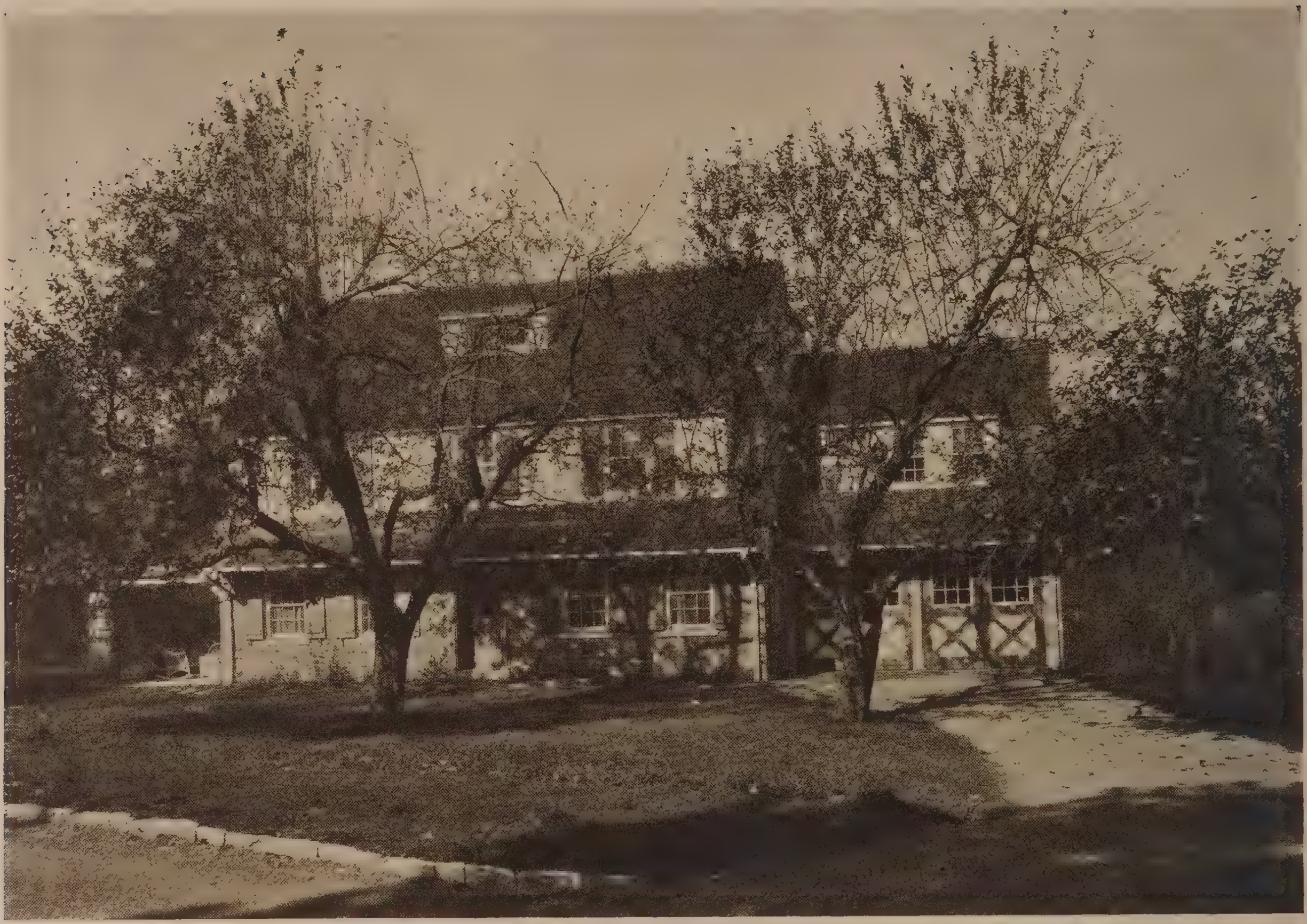
"If a built-in garage is not properly constructed it is a menace to life and property. Our investigations showed that if a fire does start in a single or two-car garage it is not likely to be more severe than would be withstood by the construction classed as affording one-hour fire resistance by the Bureau of Standards of the Commerce Department, the Fire Underwriters Laboratories, and other authorities. It follows that with an incombustible floor, and the garage separated from the rest of the building by unpierced partitions and ceiling that will meet the one-hour fire test, there is no unreasonable fire hazard. Of course, the outside walls must be fire-resistant too, and so must outside windows and the garage doors, in order to prevent flames from breaking out and spreading fire through windows, or to exterior woodwork above. The code does permit, under stringent safeguards, a single swinging, self-closing fire-door leading from the garage directly into the house, but we strongly advise that there shall be no opening whatever between the two. It is much safer to enter the garage from the outside."

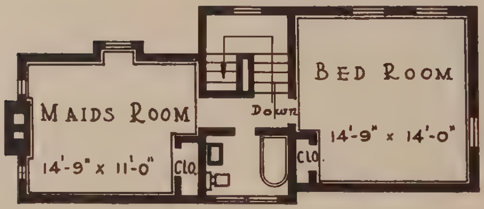
For the sake of motorists and builders who desire complete directions, Mr. Woolson has prepared below a statement, giving the six rules from the code, together with the directions for carrying them out, as given in the appendix, with a few changes to simplify the wording, which was a little more technical in the original in order to make the rules more practical to enforce. The rules are here arranged by Mr. Woolson "from the ground up," starting with floor construction, walls and partitions, then outside doors and windows, and dealing finally with the permissible case of a door directly between the garage and the dwelling.

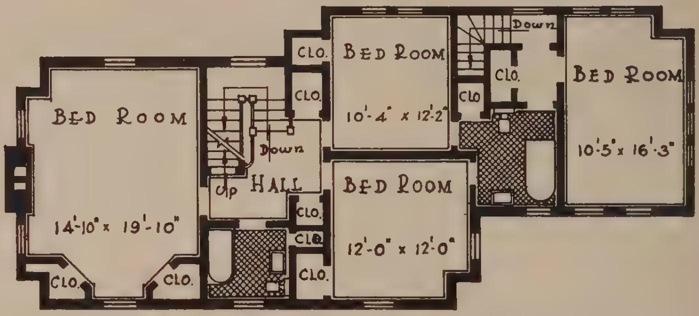
> *Rule* 1. Garage floors shall be of concrete or equally fire-resistive and impervious material.

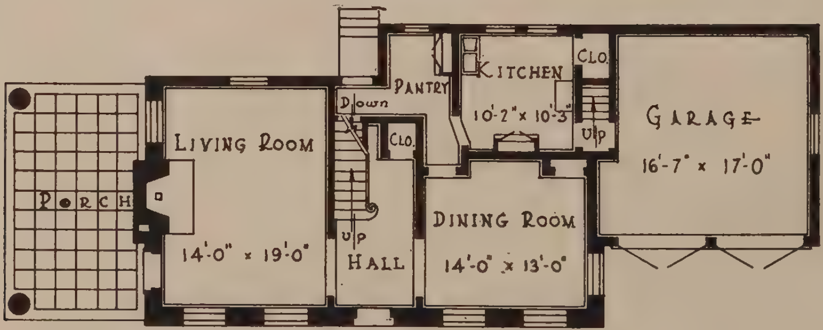
For convenience in cleaning and to prevent dangerous accumulations of water, oil, or grease, all parts of the floor should drain naturally.

> *Rule* 2. Walls and partitions shall be built to meet the requirements of the standard one-hour fire test (mentioned above).









RESIDENCE, WM. T. KIRK, 3D, ROSEMONT, PA. Wallace & Warner, Architects.

Many materials are acceptable under this rule, such as brick, hollow tile, concrete block, or gypsum block four inches thick, or reinforced concrete three inches thick. As a minimum requirement, walls may also be constructed of wooden studs spaced 16 inches centre to centre, with metal lath attached outside and inside. The outer lath is to be plastered and back-plastered with Portland cement stucco, and the inner lath plastered with $\frac{3}{4}$-inch Portland cement or gypsum plaster. For interior partitions separating the garage from the rest of the dwelling, $\frac{3}{4}$-inch Portland cement or gypsum plaster on metal lath, on both sides of studs spaced 16 inches apart, is satisfactory. The specifications for metal lath and plaster to be used are given fully in the Code Committee's Report.

Rule 3. The combined floor and ceiling construction directly above the garage shall be unpierced, and shall have a fire resistance of one hour. The same rule applies to the roof when the garage is attached to the side of the dwelling.

View showing garage, residence, Jos. J. McGee, Kansas City, Mo. Clarence E. Shepard, Architect.

Ceilings or roofs of reinforced concrete, or some other type of incombustible construction that meets the fire test, are best and most reliable. In the case of true built-in garages, a good, inexpensive overhead construction is as follows:

Ordinary 2-inch or thicker floor joists may be used, spaced not more than 16 inches centre to centre and properly bridged. The ceiling should be of heavy metal lath, weighing not less than 3 pounds per square yard, and Portland cement or gypsum plaster not less than $\frac{3}{4}$-inch thick. The metal lath is to be attached to the joists by sixpenny nails, driven nearly home and the heads turned over against the lath, and is to be bent down 6 inches along the walls on all sides, and securely attached to them. The flooring above the ceiling is to be double, of $\frac{7}{8}$-inch rough and finished floor boards, with a layer of asbestos or other high-grade floor felt between.

Where the garage is attached to the side of a dwelling, an equivalent construction for the roof can easily be devised.

Rule 4. When a garage is located beneath a dwelling, all outside doors and windows, with their frames and sash, shall be of standard fireproof construction and glazed with wired glass.

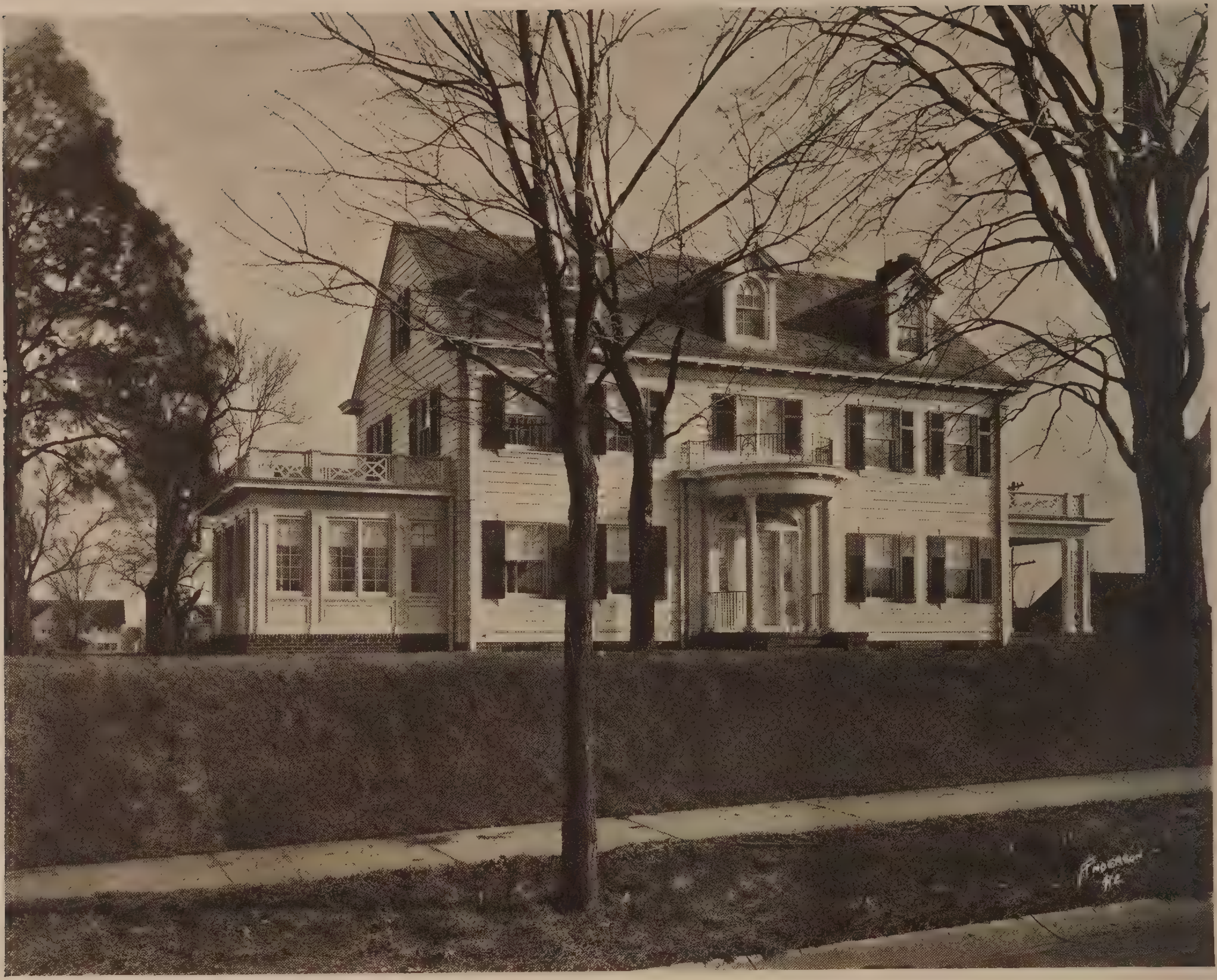
Only products approved by competent authorities should be used. A large variety of fire-doors and windows have been tested and approved by the Underwriters' Laboratories, and are a standard commodity in the building-material market. It is important that such devices should be installed in metal frames, and that the same hardware be used as that with which they were equipped when tested. If not, they may fail during a fire. Fire-doors are made in both swinging and sliding types, and many of the former are as artistic as wooden doors. Wired-glass glazing is required in all outside windows and doors to prevent flames from a fire in the garage from breaking through and endangering the structure or windows above.

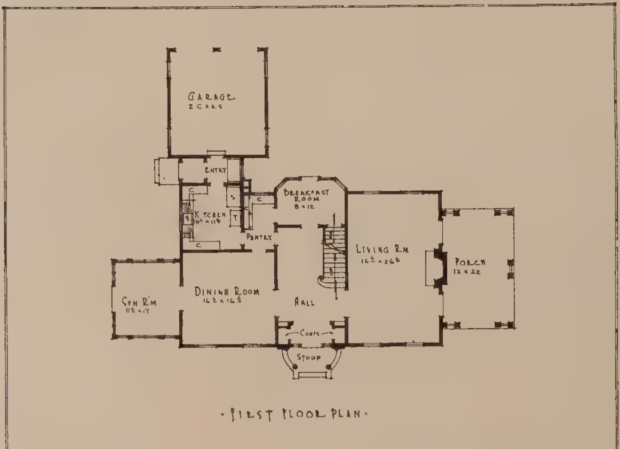
Rule 5. Openings from a dwelling into a garage shall be restricted to a single doorway. This opening shall be protected by a standard swinging, self-closing fire-door, with approved fire-resistive frame and hardware. No glass shall be permitted in such a door.

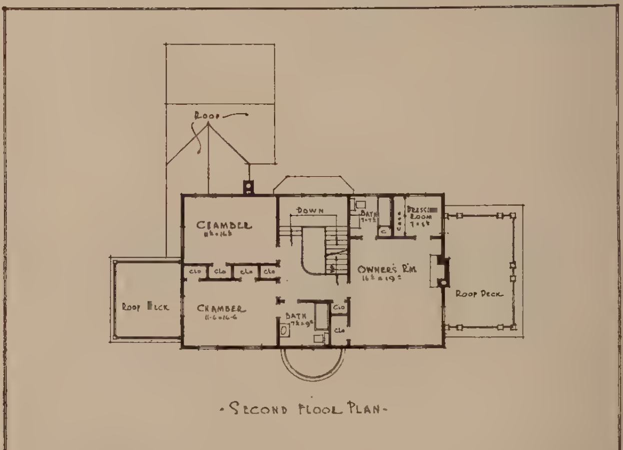
A self-closing fire-door is one that normally swings shut by a mechanical device. A swinging door is required because it fits closely into its frame, and thereby prevents passage of heat and smoke when attacked by fire. Wired glass is not allowed in this door because it is liable to soften and sag from its fastenings at a temperature of about 1600 Fahrenheit, which is a heat easily produced by burning gasolene or oil. But, as stated above, it is better to have no opening in any of the partitions.

Rule 6. When a doorway connects directly with a cellar or basement on the same or lower level in which there is any heating device or gas fixture, the door-sill shall be raised at least one foot above the garage floor level, or the doorway shall lead into a vestibule which connects with the cellar or basement by a second door.

This is to prevent fumes from gasolene which may leak or be spilled upon the floor from reaching a furnace fire or gas light that might be located in any lower portion of the building. It is well known that gasolene vapors are heavier than air, and will accumulate on a floor like water, and flow to any lower level, and if they come in contact with fire of any kind—even a spark—will ignite and flash back to the starting point, and cause an explosion—hence the high door-sill.

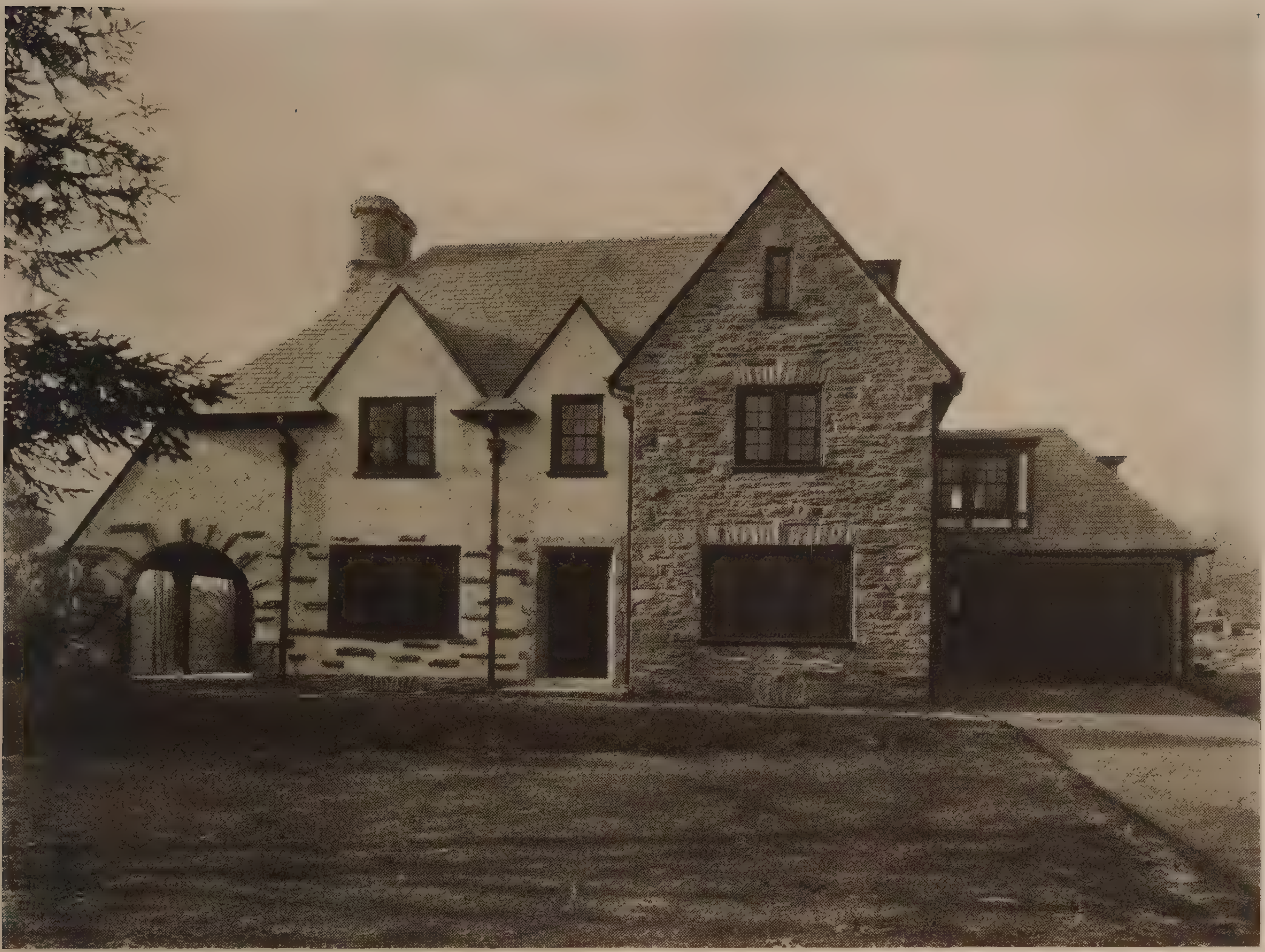


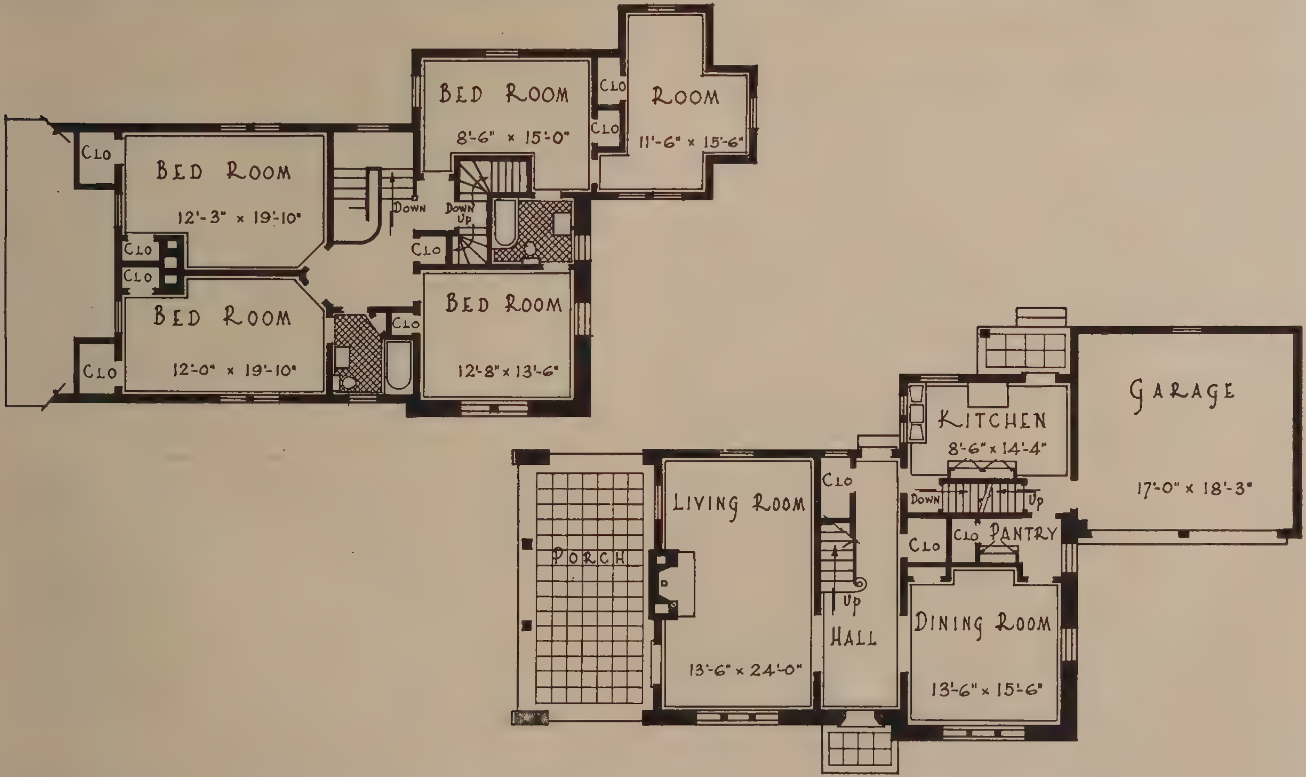




RESIDENCE, JOS. J. McGEE, KANSAS CITY, MO.

Clarence E. Shepard, Architect.





RESIDENCE, MR. KENNETH GRAHAM, ROSEMONT, PA.

Wallace & Warner, Architects.

Manual of Office Practice

By Frederick J. Adams

THIRD ARTICLE

CONSTRUCTION

48. *Building Programme.*—The contractor should prepare a programme of dates for beginning and substantial completion of each of the trades or branches forming the whole of the work, including the respective dates by which the architects' details and subcontractors' shop details will be required for each trade, etc. This schedule must be adhered to, otherwise the contractor is relieved of responsibility for the proper progression of his work. The earliest attention should be given to all work forming part of, or to be erected with, the construction, as distinct from applied, or attached, work, and in due relation to the manufacturing period of the various materials involved.

(*a*) *Schedule of Drawings.*—Immediately work is ordered forward on an operation, carefully list all details necessary to be made to fully elucidate or amplify the contract drawings. These items should then be grouped and arranged for presentation in the smallest practicable area, and in the general sequence in which said drawings will be required. The continuing record of such drawings is then to be kept in the form indicated, so that at any time the status of this part of the work can be determined accurately.

Intelligent grouping of items of similar kind of work will result in sequence numbering, with resultant saving of time in handling in and out of files, reference, comparison, etc.

49. *Transmission of Drawings.*—Use drawing transmission forms, adding any necessary text or explanatory matter necessary for the immediate purpose, in forwarding all drawings, specifications, contract forms, documents, samples, etc.

Drawings are to be handled only through the general contractor, who is responsible for the proper distribution thereof.

50. *Working Drawings and Details.*—Original working drawings other than sketches or full-size details on Manila paper must not be taken or loaned out of office, except where permitted by a member of the firm.

After the contract is signed, drawings may be issued as follows:

(*a*) *Models.*—Drawings for work requiring models must be prepared sufficiently in advance to permit adequate study of the modelling.

Original full-size details for all work for which models are required must be given to the modeller, and a copy, or copies, sent to the general contractor for information only. Office copies of such details should be revised if the finally approved models differ from the original condition, and reissued to the general contractor for construction. The modeller should be instructed as to the number of duplicate casts of model he is to furnish for the trades interested.

The general contractor should be notified immediately a model has been approved.

(*b*) *Full-Size Details* (*Original Issue*).—If drawn on Manila paper, original and one blue-print copy from file tracing to the general contractor, the original being for the subcontractor interested. One copy to the field superintendent.

If on tracing-paper—two blue-print copies to contractor, and one to the field superintendent.

(*c*) *Scale Details.*—Not to exceed five copies to the general contractor, and one to the field superintendent.

(*d*) *Extra Copies.*—Additional copies of either full-size or scale details are only to be issued upon request, and are to be charged for at cost.

(*e*) *Revisions* (*Supplemental Issue*).—Revision of drawings for reasons originating in the architects' office to be treated the same as to number of copies as when of original issue.

(*f*) Copies of revision of drawings occasioned by changes in, or for improvement of, the work, requested or sanctioned by the client, should be issued in number to correspond to original issue, but are to be charged at cost to client unless commission agreement provides otherwise.

51. (*a*) *Shop Details and Samples.*—Subcontractors' shop drawings constitute a transposition of the architectural drawings into terms and indications of shop practice, and constitute the subcontractors' intended interpretation of the requirements of the specifications and architectural drawings. Such shop drawings should be checked in the following order:

For agreement with the specifications as to material; for accord with the architects' drawings as to design and arrangement, for correctness of dimension of the space condition into which the whole of the work is to go, where such space or condition is governed by the architects' drawings. The subcontractor is responsible for ascertaining all conditions which will affect his work, whether in evidence in the structure, shown or described in plans and specifications, or by inquiry where not shown or described. The architects' actions are supplemental to the obligations imposed on the general contractor in this general connection.

The contractor is to be held responsible for the correctness and adequacy of all shop details submitted by subcontractors under his jurisdiction for agreement with the specifications as to material; with arrangement and space conditions indicated on the architectural drawings, and with the sufficiency of information given subcontractor preparatory to or during making of such shop details, as well as for the total conduct of the subcontractor's work.

Where the architectural drawings only

indicate a typical condition which is to be amplified or arranged to suit varying conditions or location, the architect is responsible for shop details for such other use to the extent to which the details constitute additional architectural drawings.

(*b*) The notations given on the transmission form must be used in handling shop drawings, and office copies retained must be marked to correspond, and further marked "File."

(*c*) Upon receipt and comparison of corrected issue of shop drawings, all previous file copies should be destroyed.

(*d*) Drawings received from contractors should be accompanied by a letter stating the number, title, and action desired. When the drawings are returned or otherwise disposed of, a notation as to such disposition should be entered on the letter before it is filed.

(*e*) Instruct the general contractor to furnish subcontractors with shop details of all work with which said subcontractors' work will come in contact.

(*f*) The field superintendent must be furnished with copies of all approved shop drawings.

(*g*) *Samples.*—Where a sample is approved it should be upon the understanding that said sample is the minimum average acceptable.

(*h*) Where the material is of a variable nature, as marble, samples of the acceptable total variation should be had.

(*i*) Call for all samples determining appearance and quality, and have them submitted in groups related to the contiguity of the work covered.

Samples should be secured in ample time before the related work is to be begun, so that in the event of repeated rejections, the progress of the work will not be retarded by lack of approved material, except by direct default of the contractor.

Neglect of this provision frequently results in a condition where the architect is forced to accept inferior work or material, as the sole alternative to a delay, if he insists on the specified quality being furnished.

While it is the theory of the specifications that the contractor should submit samples closely approximating the quality specified, it all too frequently happens that the samples submitted will be the minimum quality it is thought or hoped will pass muster.

In passing upon samples, it is fair to assume that completed work in bulk seldom equals the quality of a small selected sample. This assumption will have place in a well-balanced selection, and will obviate a choice which is not representative of the work or material it is possible to secure in the desired bulk.

52. *Specifications.*—Not to exceed five copies to general contractor, and one to the field superintendent.

Specifications are intended primarily to describe materials, methods, and quality of work required, and not as a tabulation of items. The specifications can be shortened materially, if wherever possible appropriate schedules of items of similar character are prepared to accompany the drawings.

See standard forms of schedules for wall, floor, and ceiling finish, stairs, doors, and door-frames.

(*a*) *Contract Status.*—Specifications are a part of the contract, and in such case cannot be changed without affecting the contract.

(*b*) *Changes.*—No changes should be made without the owner's knowledge and consent, or without consultation with a member of the firm, and the specification writer, and the financial result of such change clearly understood and properly authorized.

(*c*) *Record.*—A record of all authorized changes in the specifications must be kept on file with the contract copy, and copies issued to interested parties.

CORRESPONDENCE

53. *Correspondence.*—Whenever possible letters must be answered on day of receipt, otherwise they should be kept in mind and sight, and in all cases answered without unnecessary delay.

(*a*) Wherever practicable letters should be limited to one trade or branch and so headed. Contents must be indicated by heading.

(*b*) Keep correspondence down to the minimum required for effective and accurate handling of the work.

(*c*) All correspondence except with clients should be from, and to, the general contractor. In the exceptional case, where it is necessary to correspond directly with a subcontractor, a copy of the office letter should be sent to the general contractor for his information.

(*d*) Copies of all office letters, except those of confidential nature to the client, should be sent to the superintendent in the field.

CONFERENCES

54. *Conferences.*—A dated memorandum record must be made of matters discussed at all conferences with clients, and general or subcontractors. In all cases it is advisable that a copy of such memorandum be sent to the interested parties, so that any error or misunderstanding can be corrected. This is of great importance in regard to conferences with clients. All questions raised at such conferences must be followed up to a recorded determination. *Telephone conversations count* as conferences.

Where building-committee meetings are held accurate minutes of such meetings must be kept.

55. *Verbal Instructions.—Verbal instructions to a contractor or subcontractor are not binding unless confirmed by letter.* Verbal instructions from a client should always be confirmed by letter to him.

56. *Field Instructions.*—Instructions given in the field must, as far as practicable, be only through the architects' superintendent. Where this is not possible he must be fully advised of the occasion for, and the intent of, such instructions.

57. *Operation Record.*—At end of every operation a concise record should be entered on form provided and filed in record book.

Field Section

FOR DUTIES OTHER THAN SUPERVISION, SEE UNDER ADMINISTRATIVE SECTION

58. *Weekly Reports.*—Field reports should be made weekly and the conditions of progress indicated, studied by the draftsmen, and related to the work in hand.

(*a*) *Schedules.*—Immediately the contract is signed, the superintendent should put in schedule form all quantities of various items of material and work, by floors or other suitable division, and render all reports on a percentage basis. Toward end of operation report should list incomplete items.

(*b*) Reports should indicate the principal items of work under way, and number of mechanics employed by trades. See long report and checking list for items to be covered as work progresses.

(*c*) Report fully on all delays and on any item of information or drawing required.

(*d*) Requests for information should be made immediately, and not wait on making of formal report.

(*e*) Where superintendence is by periodical visits progress reports should be made the same as required for resident field superintendent, or clerk of works.

(*f*) *Tests.*—The field superintendent must be present at all tests of material or work, and must report fully the result thereof.

(*g*) *Future Work.*—Field reports should also give particulars as to future dates for starting parts of the operation.

The quality of supervision in the field has an important bearing on whether complete co-operation between architect and contractor is secured. Field supervision by the architect means a great deal more than counting mechanics, measuring mortar mixes, and considering æsthetic problems. It is the architect's personal participation in the work of moulding labor and material into the actuality of which his drawings portray the mental concept.

It follows that where part or all of the supervision is delegated, there must be the fullest and most sympathetic co-operation between architect and agent, if the best results are to be secured.

Complete and unquestioned authority as to all field matters is the right of the delegated agent, to the extent to which he is held responsible for results. His province is that of the liaison officer whose duty it is to *secure unity of action* between the interested parties. Next to inspection of material and work, his most important duty is to exert himself to foresee the incidence of delays and difficulties, and to counter-plan against them.

HINTS FOR DRAFTSMEN

Discriminate carefully between various types of building, their intended, or possible, life, present use and convertibility to other use, and character of upkeep or maintenance intended. All of these factors have a bearing on the kind and quality of finish and construction best suited to the problem.

In buildings of monumental character, quality of finish is relatively of more importance than immediate economy of expenditure. Particularly where such a building is for municipal use no reliance can be placed on active or intelligent upkeep for maintaining it in good condition, and the effort must be to secure a finished result which will continue well appearing for a long period with a minimum of care and repair. A fixed appropriation is usually the limit of total expenditure which cannot be exceeded.

In residence buildings the features of design and finish result from intimate discussion with the client of means of attaining desired results with intent to secure the maximum effect with relative economy of expenditure. The lesser wear and tear and the better upkeep usually permits the use of detail and construction of decorative work, which is barred in other types of building because of perishable character.

In all buildings of commercial character the element of income return is the most important factor, and the maximum effort must be made to keep initial expenditure at the lowest possible level consistent with durability and suitability, having always in mind a minimum maintenance cost over a long period of years. The element of proposed service to tenancies is practically the only reason for departure from the simplest possible construction, finish, and equipment.

Being almost invariably constructed under conditions in which original contemplated cost and carrying charges have to be financed on a loan basis, failure to complete on time or within the preliminary estimates of cost results in serious embarrassment of the client's plan of procedure. It is imperative that nothing be done that might occasion such embarrassment without the complete accord of the client and only where the result is an improvement of the building having a satisfactory relation to its income capacity.

As to construction in general, the best is none too good. No departure should be made from first-class standard practice unless it is understood by the client what sacrifice of finish or durability is involved in construction of poorer quality with a lower initial cost.

Avoid features having a short life value or likely to become obsolescent.

Strive for maximum undivided areas and the most perfectly daylighted and naturally ventilated interiors.

Commercial buildings are always in competition for business.

All buildings must be made as nearly fire-proof as the type of construction adopted will permit, and in all cases must be planned for the safety of occupants in emergency conditions.

Saddles.—No raised saddles are to be provided between rooms and spaces except where specifically instructed, and where necessary for practical reasons.

Standard height of saddles where used five-eighth inch above finished floor.

Plinths.—The use of plinths must always be given special consideration, as elimination will frequently benefit the appearance of the work, where practical reasons do not exist for retention.

Doors.—Door swings must be carefully studied to avoid conflict. In bedrooms hinge jamb should be toward bed location, in baths toward W. C. location. Closet doors to swing to admit daylight where possible.

Exits.—Arrange door swings with relation to exits for all commercial or multiple occupancy buildings.

Closets.—Closet floors should be one-half inch higher than floor of room adjoining with saddle flush on closet side.

Heating.—In residence work heating of service portion should be arranged to permit operation independent of master's portion.

Switches.—To be located for convenience and to be as inconspicuous as possible, generally close to trim.

Do not place in trim unless specially detailed for.

Receptacles.—Should be located ordinarily about fifteen inches above finished floor where the plug itself can readily be reached, to avoid short circuit from pulled wires, water, etc., and where protected from damage by moving furniture.

Baths.—General lighting to be by ceiling fixture controlled by switch at door.

Mirror lighting should ordinarily be by bracket outlets on each side of mirror with pull-socket or key-socket control.

In country residence work, sockets for room-heating devices frequently desirable to obviate premature operation of house-heating system.

Showers.—Valves must always be located for control without entering shower.

Tubs.—Provide for access to overflow and waste mechanism.

Bathroom Fittings.—Should always be included and not allowed to crop up as an extra.

Kitchens.—Provide separate hood vent as well as flue for products of combustion. Ascertain if electrical cooking devices are to be used. Make provision to prevent grease clogging waste-pipes from sinks. Make provision for removal of garbage by incineration or other suitable means.

Laundries.—Provide space and outlets for mechanical washing-machines, mangles, and for electric irons and provision for clothes-drying, both indoors and out.

Weather-Strips.—Make provision for all exterior openings in all cases.

Screening.—Ascertain if local conditions require fly or mosquito screening, and make suitable provision for same.

Muntins.—Always to be a minimum practicable section unless otherwise directed. This applies equally to all parts of wood or metal windows.

Blinds, Shutters.—Ascertain requirements allowing space to install, particularly if Venetian blinds are desired.

Curtain Pockets.—Provision should be made in master's living portion of all residence buildings, and in special suites other types of buildings.

Damp-Proofing.—Always to be provided for all subgrade structures except where local conditions permit omission. Also under all toilet or bathroom floors, around showers, under all flat or nearly flat roof finish and on inside or outside of all walls subject to extreme weather conditions.

Levels.—All floor levels should be noted with reference to datum plane, usually the grade adjoining the building.

Hung or Furred Ceilings.—Allow four inches from bottom flange of steelwork to finish line of hung ceiling.

Floor Thickness.—Allow a minimum of four and one-half inches from top of floor steel to finished floor, except where pipe and conduit layouts permit standardized decrease.

Window-Sill Height.—Unless otherwise directed, glass line in buildings of three stories or over should be three feet above finished floor.

Fire-Proofing.—Allow two inches over steel in all shafts, on columns and on bottoms of girders. Allow four inches of terra-cotta for enclosing all ducts piercing floors.

Fireplaces.—Flue area to be not less than one-fifteenth of fireplace opening. No bends sharper than forty-five degrees. Use cast-iron throat with adjustable damper and preformed smoke-chamber. Jambs of all fireplaces to be splayed from line of facing unless otherwise directed. All flues to be lined with terra-cotta pipe.

Hardware.—Hardware should be selected at earliest practicable moment, as it affects detailing of doors, etc. Particular study must be given to holding devices for casement windows.

Piping.—Increased thickness of partitions to cover piping.

Projections.—Unless specifically agreed upon by parties interested, no external projection, ornamental or otherwise, is to be placed in front of, or over, adjoining property.

CHECKING LIST

In addition to items of general office practice included under heading "Hints to Draftsmen," all drawings must be checked for definite inclusion or non-inclusion of all the following items in due relation to the requirements of the particular operation. The list is intended as a reminder of items frequently omitted entirely, or inadequately provided for, either as to space, or conflict with other work, and not as a *limitation of* what is to be shown or included.

Check carefully for other items peculiar to the particular project under consideration.

While the items are listed under general headings they should be checked for *occurrence and recurrence* under any trade or branch heading incident to the particular operation.

In the inclusion of an item always consider and check the relation to work of other trades involved, as, for instance:

Enclosed Radiators.—This item affects the following: Heating, size of radiators, sheet metal, enclosure lining, insulation of enclosure, inlet and outlet registers, and frames.

Ornamental Metal.—If enclosure is of cast or wrought metal, if register faces or frames of special design.

Carpenter Work.—If enclosure is of wood, trim, jambs, setting of hardware.

Hardware.—Provision for access to enclosure.

Plastering.—Corner beads, depth of reveals.

Painting.—Inside of enclosure, register faces and frames, etc.

Indication on small scale drawings can be limited to showing location, size, and number included; the larger scale drawings to show the required construction in detail.

Head room under all pipes, ducts, on stairs.

Guards for depressions in grade levels, moving machine parts, etc.

Brick or stone masonry joints must come at level of supporting steel.

Stone lintel and sill bearings should not be over four inches and two inches respectively, to avoid settlement cracks.

Except where gutters are provided, all exterior top surfaces (other than shallow sills) which would hold ice or snow must be drained and arranged to prevent ice or snow falling.

Thickness of surface finish and depth of all returns, reveals, etc.

Curb and building line levels and sidewalk grades.

Floor levels and column centres.

Material, dimensions, bond, finish, ornament, and extent of all exterior finish.

Signs, tablets, inscriptions, statues, street numbers, flashings, outside blinds or screens, storm sash, awnings, flower-boxes, stone wheel-guards.

Location, width and height of all openings, exterior and interior, heights of ceilings, transoms, soffits, locations of all columns, struts.

Interior dimensions to be to rough construction—allow three-fourth inch for plaster, two inches for marble or wood panelling, one and one-half inches for tile.

Ceiling Lights.—Provision to be made for easy cleaning both sides.

Toilets, Lockers.—Provide for building help, servants, etc.

Storage.—Provide adequate receiving and shipping facilities and storage for building equipment, trunks, etc.

The list of items, some nine hundred in all, comprising the rest of the checking list, is too long for inclusion in a magazine article. The theory upon which it was composed was to excite mental activity by naming items susceptible of varying uses and locations, rather than an attempt at a trade catalogue. The trade division is used only to the extent an item would appear more often thereunder. The time and space saved by this method is illustrated by the item flower-boxes. This item is mentioned once only, under the heading masonry. If listed under trades it would mean repetition for every material of which the boxes could be made. As an indication of arrangement and content, one heading and its underlying items are given.

WATER-PROOFING AND DAMP-PROOFING

Membrane
Integral
Cement
Brushed
Protection
Pits
Foundations
Areas
Tunnels
Sidewalks
Vaults
Kitchen
Laundry
Cellars
Courts
Showers
Baths, toilets
Tank rooms
Flat roofs
External walls
Internal walls
Cement mortar

CUBE

Close approximations of cubical contents of buildings for purposes of comparison or tentative estimate should be based on the following:

Volume contained within external profile of building from one foot below finished cellar bottom to and including all flat or nearly flat roofs, and of sloping roofs as follows:

Hip roofs—25% of volume if unfinished
40% " " " finished
Gable 33⅓% " " " unfinished
50% " " " finished

Add to the above the volume of all trenches, tunnels, etc., below the one-foot line, referred to, and where footings are other than of moderate spread type the entire volume of such footings.

For porticos, porte-cochères, or similar open construction, thirty-three and one-third per cent of total volume or a greater percentage if finish or construction elaborate.

The above cubic volume can be translated into approximate cost.

Where foundations are of special type, as caisson or piling, a separate estimate of quantity is needed as having a widely varying value peculiar to the conditions to be encountered.

AREA

Approximate rental areas of commercial structures where rental square footage is the desired result should be based on the following:

Gross Rental Area.—Entire area contained within the enclosing walls less the area of building utilities, such as stairs, toilets, sink closets, elevator and pipe shafts, elevator halls and any space not permanently or continuously occupiable by tenancies because of municipal regulations.

Net Rental Area.—Gross rental area less the area of all communication corridors or passages and walls thereof, required to afford ingress or egress to any part of a floor subdivided into separate rental areas, less wall piers and less excess area of columns over three square feet in area.

Area tabulations should be separate for below and above grade portions of building.

To compare plan and resultant cube the ratio of net or gross rental square feet to cubic feet should be obtained. This can usually be limited to above grade portion, assuming that the arrangement or volume below grade would be approximately similar for any plan above.

To compare utilization of site, gross area of building should be compared with net rentable area both by floor and gross.

Unless otherwise agreed, net rental areas only should be considered.

(*To be continued*)

Announcements

DeWitt Clinton Pond, known to all readers of ARCHITECTURE as the author of "Concrete Construction for Architects" and the series of articles on "Perplexities of Estimating," has opened an office for the practice of architecture in the new Park-Lexington Building, on Park Avenue.

Mr. Pond has had an exceptionally valuable experience in the designing and construction of large reinforced concrete buildings, and his services in this special field will, no doubt, be in great demand.

He has written not only on the purely practical aspects of his profession, but as well on architecture looked at from the point of view of the artist.

Mr. Pond's new book on "Drafting-Room Mathematics" is announced for publication this fall by Charles Scribner's Sons. It already has the endorsement of a number of leading architects, and should find its way into the office of every architect in the country. It simplifies many things that have puzzled both draftsmen and heads of offices.

F. P. Platt & Bro., architects, announce that they have removed their offices to 221 West 57th Street, New York City.

John Sloan, architect, announces that T. Markoe Robertson has been admitted to partnership under the firm name of Sloan & Robertson, with offices at 1 Pershing Square, New York. Mr. Robertson recently sailed, in company with his bride, for a two months' tour of England and the Continent, and will return about July 1.

Marks & Kann, registered architects, announce the removal of their office from 28 Jackson Building to 703–704 Home Trust Building, Sixth Avenue at Wood Street, Pittsburgh.

Samuel J. Horn, architect and engineer, has opened an office at 222 Delaware Trust Building, 9th and Market Streets, Wilmington, Del. Manufacturers' catalogues and samples are requested.

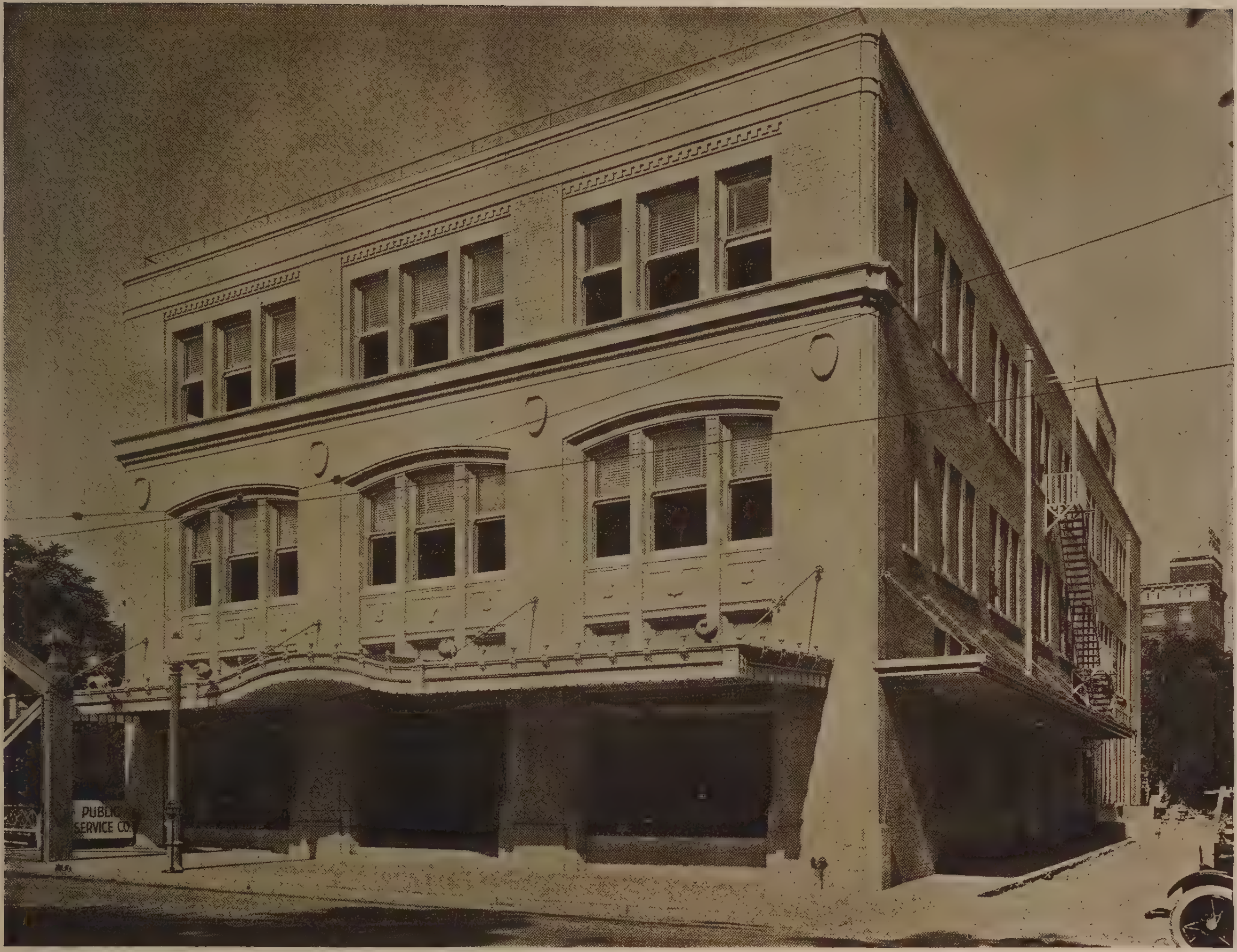
Kenneth B. Worthen, architect, and George M. Ilg, structural engineer, announce that they are now in their enlarged office suite at 647 Endicott Building, Saint Paul, Minn.

H. M. Haven & A. T. Hopkins, Inc., engineers and architects, announce their removal from 40 Court Street to new and larger office facilities at 11 Beacon Street, Boston, Mass.

Gibb & Waltz, architects, wish to announce the removal of their offices, formerly in the Ithaca Trust Company Building, to Suite 16M on the first mezzanine of the new Ithaca Savings Bank Building, Ithaca, N. Y.

Raymond J. Purdy and William H. Davis, architects, announce that they have formed a partnership under the firm name of Purdy & Davis with offices at 350 Madison Avenue, New York.

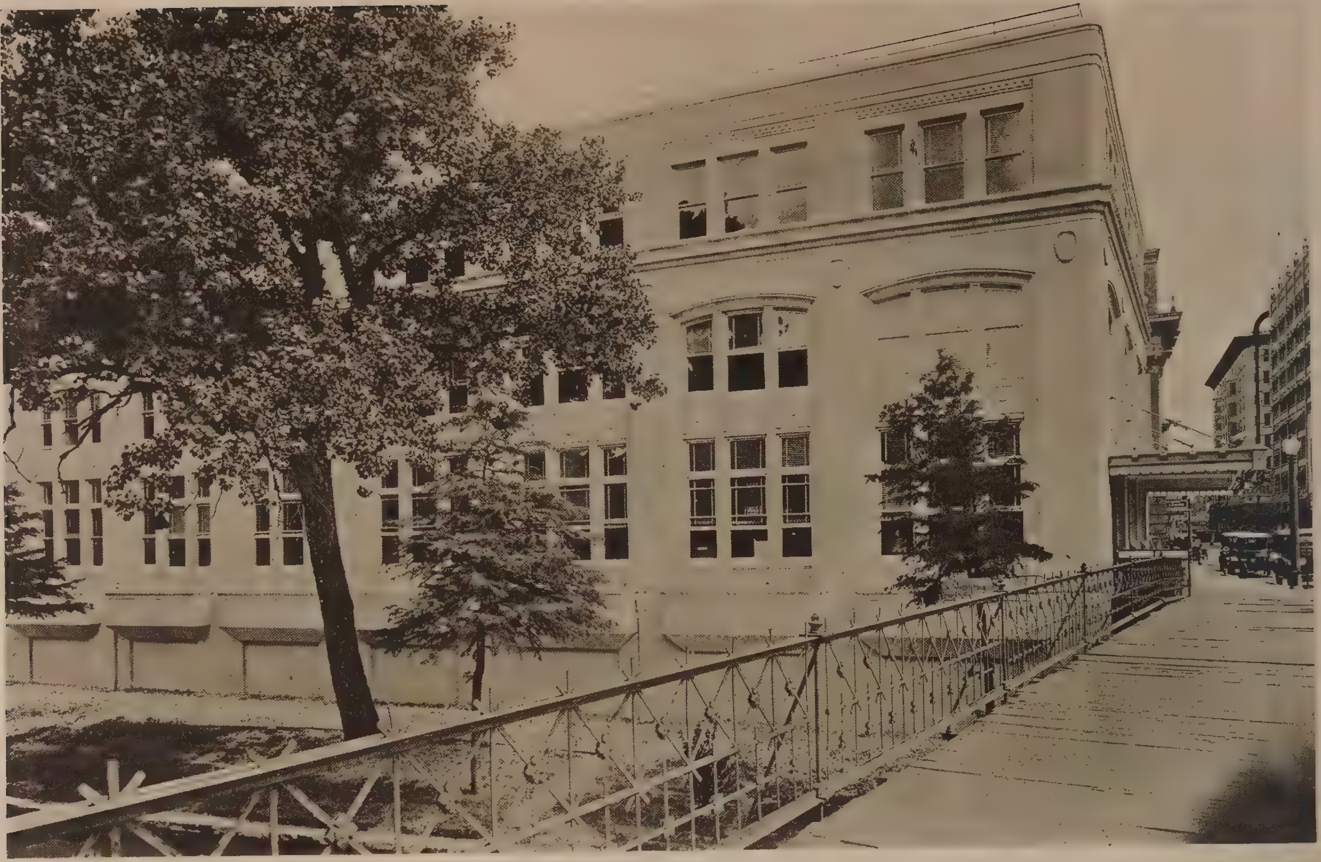
The office of John Russell Pope, architect, is now located in more extensive quarters at 542 Fifth Avenue, New York.

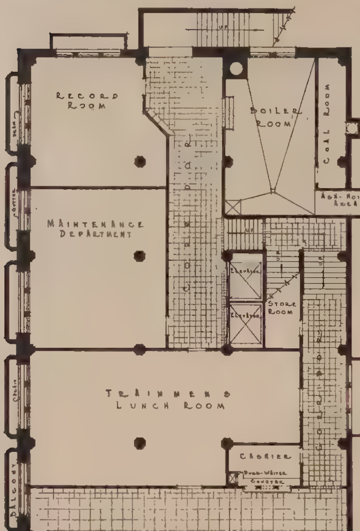


San Antonio Public Service Building

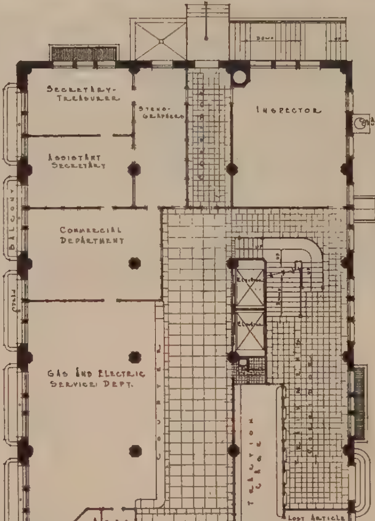
Atlee B. Ayres and Robert M. Ayres, Architects

THIS building was erected several years ago on the banks of the San Antonio River. At times we have had some very severe rains which caused our river to rise to abnormal heights, coming up to the street level on several occasions. When the plans for the building were being prepared the Public Service Company wanted to utilize a basement, but desired to guard against the possibility of water getting into same. The method we devised was to place balconies along the river frontage, and behind these we placed the windows for lighting and ventilating the basement. The entire basement walls and floor slabs are of reinforced concrete and waterproofed with integral and membrane waterproofing. The floor slab was put down in two thicknesses with membrane between same. All outside walls of basement were of concrete treated with an integral waterproofing, besides applying two coats of Marine Cement to outside surfaces, over which was applied membrane. Over the membrane along the river frontage was placed an additional 8-inch wall to protect the membrane. This wall was bonded to the concrete wall with metal ties. The mode of waterproofing that was carried out together with the balconies for protecting the windows has proved a success. This building of the Public Service Company was designed for a seven-story structure, but only three stories were built, with the fourth floor, now in position, acting as a roof. The tops of the walls were treated in such manner as to allow for the adding of future stories without removing any of the brick work.

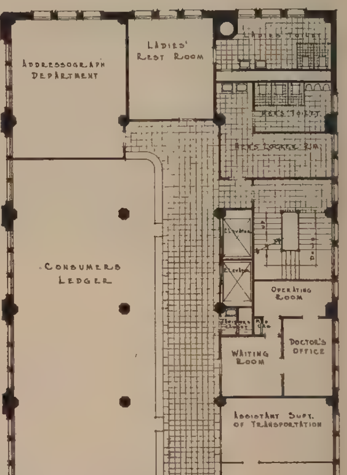




· BASEMENT ·



· FIRST FLOOR ·



TYPICAL FLOOR.

PUBLIC SERVICE BUILDING, SAN ANTONIO, TEXAS.

Atlee B. Ayres and Robert M. Ayres, Architects.

Perplexities of Estimating

By DeWitt Clinton Pond, M.A.

FIFTH ARTICLE

WHEN these articles were contemplated, the thought which was foremost was that there might be devised some method of estimating that would be simple, yet sufficiently accurate, for an architect to use in determining the cost of the structures he was planning. The more the subject was discussed, the more it became apparent that, as there were certain factors which enter into the cost of a building and with regard to which the architect has little or no control, such a thing appeared to be impossible, and that for the owner's professional adviser to do more than indicate what the approximate costs might be would be a dangerous thing. This should be clearly understood by both architect and client at the time that preliminary sketches are being prepared, if the most annoying type of misunderstandings is to be avoided.

One architect recently informed the author that he had spent an entire day with owners in conferences over the question of cutting down costs of various buildings after bids had been received. Owing to the conditions, notoriously prevalent at this time, the bids had all been higher than he had believed they would be at the time the preliminary sketches had been submitted. Had the architect not been wise enough to inform his clients that his estimates were mere approximations, he might have been in an embarrassing situation when the bids were received.

When another architect was informed that the author believed no architect was in a position to estimate, he replied: "He ought to be." This seems to be the attitude of many men who are engaged in professional work of this nature, but contemplation of a single item that enters into an estimate will show how far removed from the actual facts of the case this attitude is.

One firm of contractors, in estimating costs, has a certain percentage of the net cost which is allowed for contingencies. Under ordinary circumstances this item is nearly always accounted for in the final estimate, but, if it is very desirable for this firm to secure a contract, it is known that this contingency item is eliminated entirely from the bid. This might make a difference in the actual cost of a building to an owner of about five per cent. Can an architect judge whether this is to be the case or not?

When this was explained to the architect, he agreed that in a bid there would be items with regard to which no architect could speak with certainty; still, allowing for the fact that there is sure to be a certain amount of doubt with regard to the large items of overhead, contingencies, and profits, one might assume, with regard to some of the smaller matters, such, for example, as the cost of a concrete wall, an architect should have a certain amount of knowledge which might be helpful. It might be an interesting matter to see if it would be possible to estimate the cost of such a wall, allowing the architect only such knowledge as he is in a position to obtain. On the whole, this would seem to be a simple enough matter.

One hears to-day of the cost of a cubic foot or a cubic yard of concrete "in place." At the very beginning one must inquire if this cost includes form work or not. There are some who use such a cost unit, which is supposed to include the cost of forms, in order to make a guess—it is nothing more than this—at the cost of foundation walls. However, this is the most approximate kind of estimating. In fact, it is not really estimating at all, which is defined as the method of computing the cost or value of anything. The actual cost of a wall might be a very different amount from the figure arrived at by calculations in which the unit cost includes the value of the form work. As will be shown later, forms, which must be estimated on the basis of cost per square foot, must always be figured separately, and the value of a cubic yard of concrete in place should include only the amounts which must be paid for the ingredients and the labor of placing them.

Concrete is made of three ingredients—cement, sand, and broken stone or gravel. Therefore, in order to know what the unit price of concrete is, it will be necessary to determine the cost of each one of these as they will enter into the cost of the wall. After these items have been accounted for, then the cost of forms must be investigated, and, if the wall is to be reinforced, the value of the steel must be added. Another ingredient, which is not always considered as being a part of the concrete, but for which a certain allowance must be made, is water. There are two other costs which must always be estimated in order to include all the items, and these are the amounts that must be allowed for plant and power. These amounts may be large or almost negligible—depending upon the size of the building operation—but they must be accounted for in some manner, as must be the two final items of the cost of mixing and placing the concrete. Even without any subdivisions, these items present a rather imposing number of things to be considered, and it may be well to make a list of them.

Cement.
Sand.
Gravel or broken stone.
Water.
Plant.
Power.
Mixing and placing.
Forms.
Steel.

This list just represents only the major headings in the estimate, and each may be, in fact must be, subdivided in a real estimate. With regard to the cost of cement certain following subheadings enter into the amount that must be paid for a bag or barrel of cement delivered and stored at the site. It must be borne in mind that for large undertakings this item of the cost of cement is determined in a somewhat different manner than when a small building is being built. When a large contracting firm is in charge of the building operation, cement is bought alongside the dock to which it has been brought by barge. When a small residence is being erected, the contractor purchases the cement from a local dealer, and the price per bag includes the cost of delivery at the site. In the first case the price to be paid for a bag or barrel of cement can be determined by reference to technical magazines where the prices are quoted of not only cement but other building materials such as stone and sand. To such costs must be added the amounts that must be paid for delivery to the site. In the second case the item of delivery may be disregarded, for this is included in the price quoted by the dealer.

In passing, it is not out of place to note that the dealer who sells the cement or aggregate not only includes in the price the cost to him of receiving, storing, and delivering the materials, but adds his profit as well, which may be large or small, depending upon conditions pertaining to the local situation. In certain districts surrounding New York City such profits are not always small.

Bearing such conditions in mind, and taking as our example a condition in which a large building is being erected, it is interesting to see what the subheadings are in what would appear to be such a simple matter as finding out how much a barrel or bag of cement will cost if it is delivered or stored on the site, ready for mixing in the concrete. First there is the cost of the cement itself as delivered alongside of the dock; then there is the cost of testing; next, there is the expense due to bag loss; and finally the cost of delivering and receiving the cement. It can be seen that there are many things to be considered even under the simple-appearing heading of cement.

When cement is purchased for simple work many of these items are included in the cost per bag, but it must be remembered that they are actually there.

Sand, stone, or gravel costs must be determined in the same manner, but the items of testing and bag loss are, of course, omitted. When the sand and gravel are screened, prior to mixing, there is obtained a very good indication of the quality of the aggregate.

In this manner the actual cost of a bag or barrel of cement and the cost of a cubic yard of sand or gravel or crushed stone are determined as it is stored at the site, ready for mixing in the concrete. Knowing these costs, it is necessary to proportion them so that the price of the cement and aggregate in a cubic yard of concrete can be determined. All handbooks dealing with the subject of concrete construction contain tables giving the quantities of materials for one cubic yard of rammed concrete, and from such a table, assuming average conditions and a 1, 2, 4 mix, it can be found in a cubic yard of concrete there will be 1.57 barrels of cement, .44 of a cubic yard of sand, and .88 of a cubic yard of stone. It is not a difficult matter to determine the cost of cement and aggregate in a cubic yard of concrete when the facts, given above, are known.

The charge for water used in mixing the concrete may not be large, but it should be taken into account.

The plant rental or cost is an item that might vary widely. The plant may be a very complicated affair to be used in an important piece of construction work, consisting of power-driven mixers, towers, hoists, belts, runways, and pits, or it may be simply a mixing platform on which the concrete is mixed by hand. However, the item of plant rental should be included in the unit price that is used in estimating the cost of concrete.

The cost of power may vary in a similar manner. The concrete may be mixed in a batch mixer, driven by a motor, or it may be mixed by hand. In one case the power item is a large one, in the other it simply does not exist.

However, in any case there is always a labor charge in mixing and placing concrete. Where a large building is being constructed this is smaller per unit than where a small one is built.

Now when all of these matters have been accounted for and added together, it is possible to determine the charge that should be made, under the circumstances that surround a particular job, for a cubic yard of concrete in place, but this cost will not and should not include the cost of the form work.

Forms are usually estimated on the basis of the cost per square foot of the surfaces that the forms cover. The method of determining the costs of form work is very similar to that employed in finding the cost of any rough carpenter work. The amount of lumber that it is necessary to use in framing forms is estimated and the cost determined on the basis of the prevailing price per thousand feet of board measure. Then the labor of making the forms is estimated and placed in the proper column on the estimating sheet. The number of times that forms can be used is a very important consideration. Of course such minor items as nails, wire, sleeves, and bolts must also be accounted for if they are to be used in the manufacture of the forms or in the placing of them.

If the wall is to be reinforced, the number of pounds of steel must be determined and the cost listed, as well as the cost of receiving and placing the steel.

When the unit cost of a cubic yard of concrete has been determined in the manner given above, it is possible to estimate the number of cubic yards of concrete that it will actually take to pour the wall under consideration, and the cost of the concrete can be easily computed.

When the unit cost of a square foot of form work can be found, then it is only necessary to multiply this by the total number of square feet, and the cost of the forms can be determined.

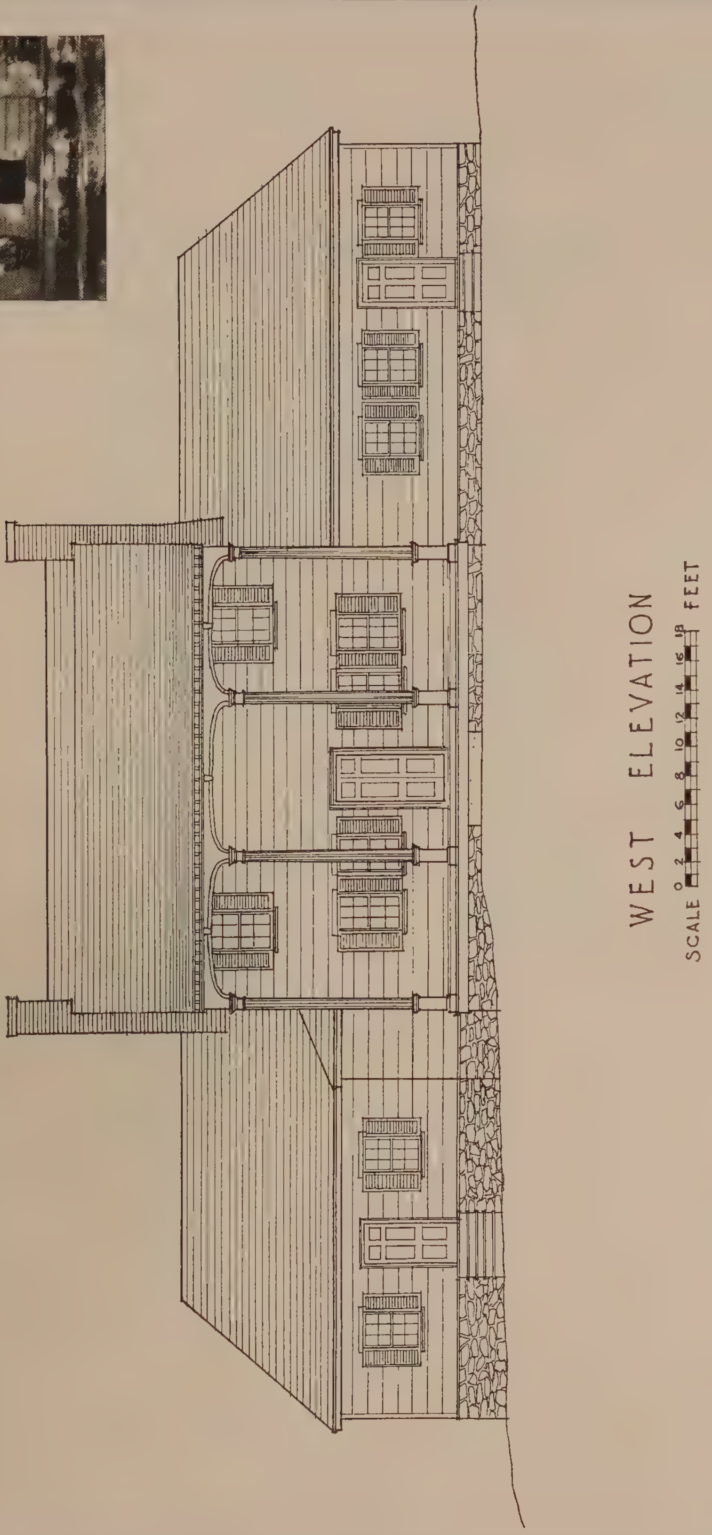
When the unit price per pound of steel has been arrived at, then the number of pounds must be taken off the drawings and the total cost of the steel entered on the estimator's sheet.

It can be seen how the three items of concrete, forms, and steel must be estimated separately, and that it is mere guesswork to attempt to combine them all in a unit price per cubic foot of concrete. Of course, where there is a contractor who does nothing else but build twelve-inch concrete foundation walls in a part of the country where he knows that the cost of his ingredients will not vary to any great extent, such a builder may be able to make a rough guess as to a unit cost that will include forms, but he is always taking a certain chance when he does this, and a condition may arise where he will use such a unit, figure high and lose the job, or figure low and lose money.

So when one hears about the cost of a cubic yard of concrete in place he should not take this figure too seriously without looking into it. It can be seen that there are many items that enter into the determination of a unit price for concrete, and that any one of these may vary. When one hears that a cubic foot of concrete in place will cost between forty-five and fifty cents, and that forms will cost about fifteen or eighteen cents a square foot to make and place, these figures should be used only as a very rough check to be placed against other figures that are arrived at after careful study.

When the architect attempts to estimate even such an innocently appearing item as the cost of a concrete wall, he is immediately confronted with a large number of items against which he must put some definite costs, and unless he is actually buying materials, as a contractor does, or is employing labor, how is he to know what costs to place against his various items? His estimate with regard to a wall or a chimney or any other part of even a small house will be as approximate as will his estimate of the whole house based upon a cubic-foot price.

So as a final summary of all that has been said in the previous articles, it would seem that an architect is not in a position to do more than determine the cost of the building he is planning on a cubic-foot basis, and frankly to tell the owner that such an estimate is of the most approximate nature, and that no one will know what the cost of a building will be until bids have been received which will act as a basis for a signed contract.

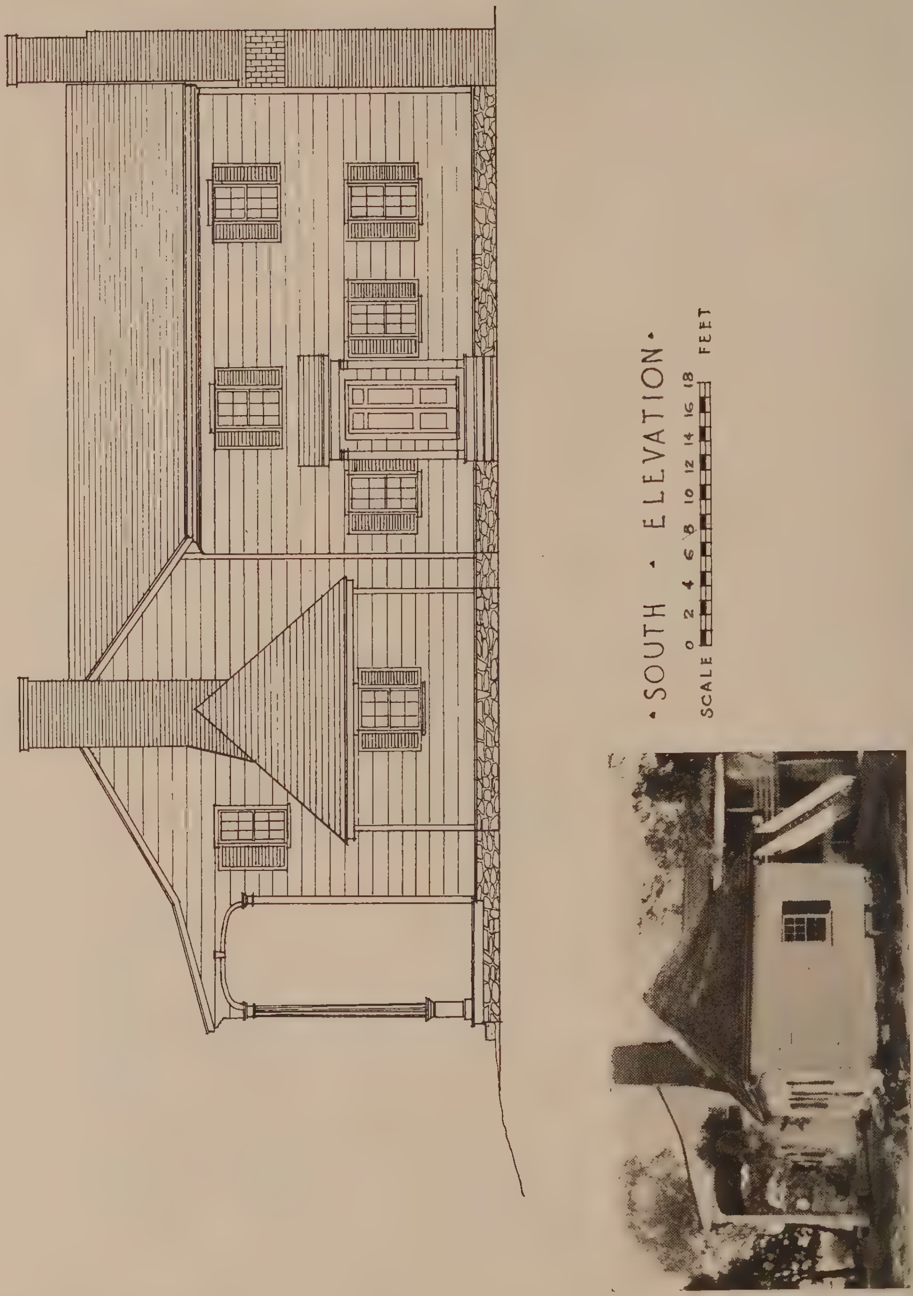


DRAWING NO. 1

EARLY COLONIAL
ARCHITECTURE
OF MARYLAND

A HOUSE IN BLADENSBURG MARYLAND
ON THE ANNAPOLIS ROAD
BUILT 1769

MEASURED AND
DRAWN BY
ALBERT P. ERB

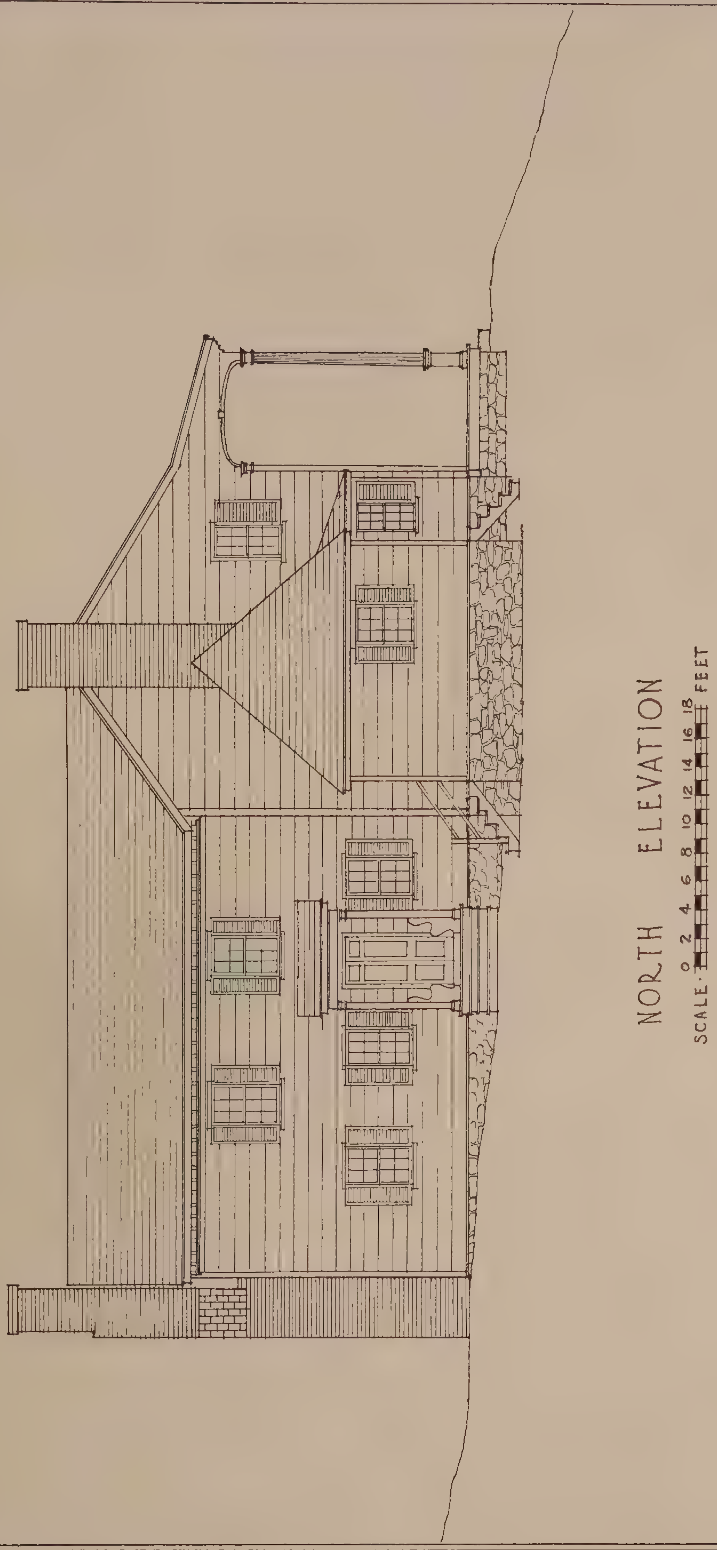


DRAWING NO. 2

EARLY COLONIAL
ARCHITECTURE
OF MARYLAND

A HOUSE IN BLADENSBURG, MARYLAND
ON THE ANNAPOLIS ROAD
BUILT 1769

MEASURED AND
DRAWN BY
ALBERT P. ERB

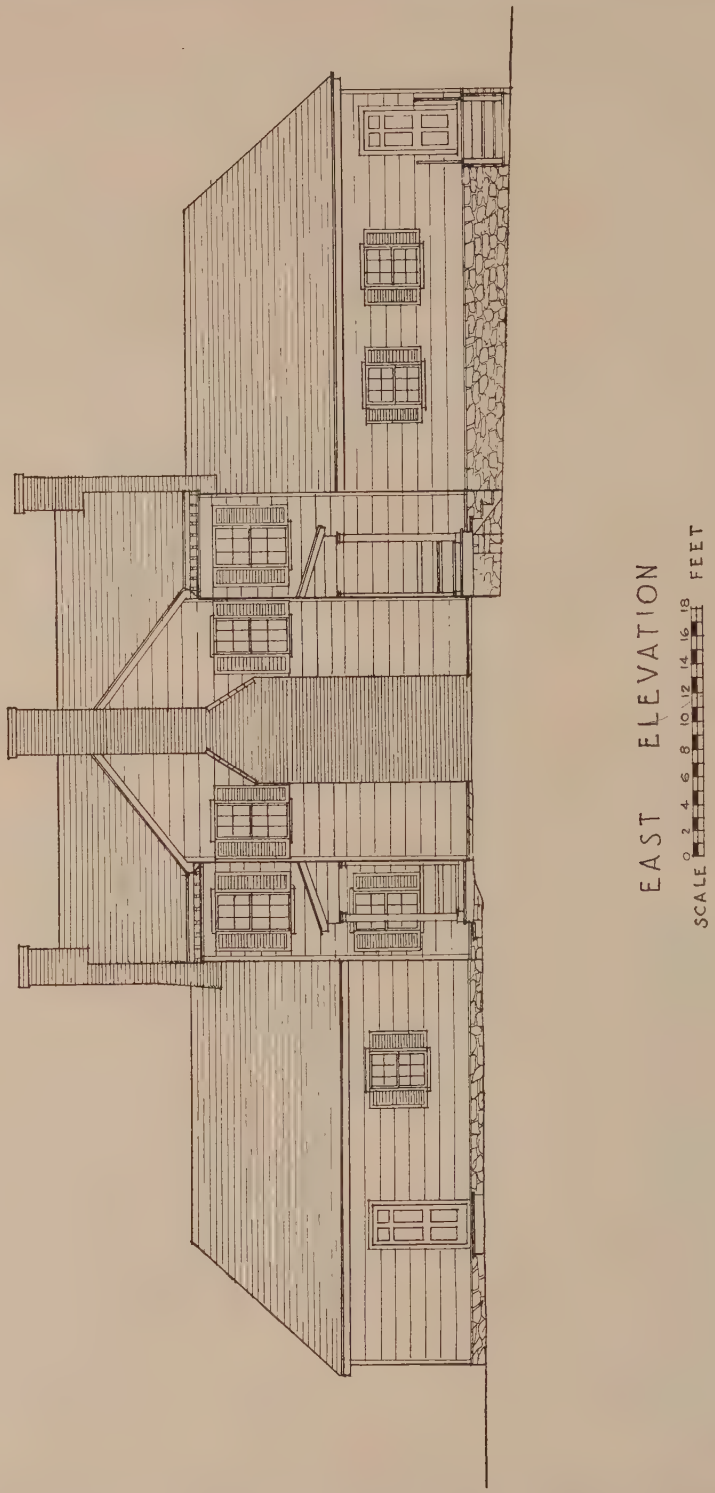


DRAWING NO. 3

EARLY COLONIAL
ARCHITECTURE
OF MARYLAND

A HOUSE IN BLADENSBURG, MARYLAND
ON THE ANNAPOLIS ROAD
BUILT 1769

MEASURED AND
DRAWN BY
ALBERT P ERB

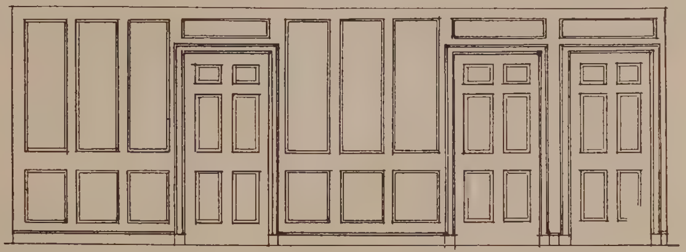


DRAWING NO. 4

EARLY COLONIAL
ARCHITECTURE
OF MARYLAND

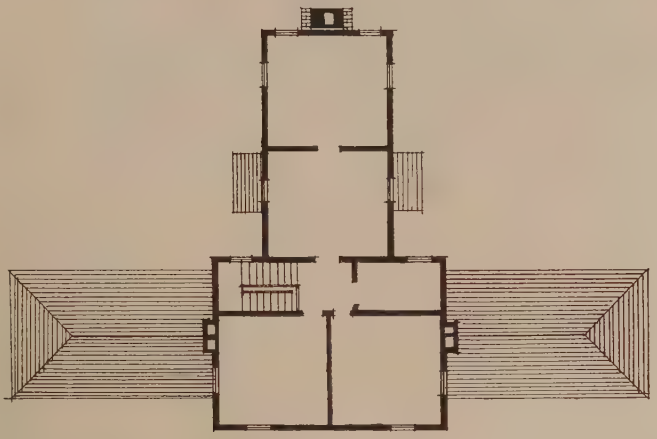
A HOUSE IN BLADENSBURG, MARYLAND
ON THE ANNAPOLIS
BUILT 1769

MEASURED AND
DRAWN BY
ALBERT P. ERB

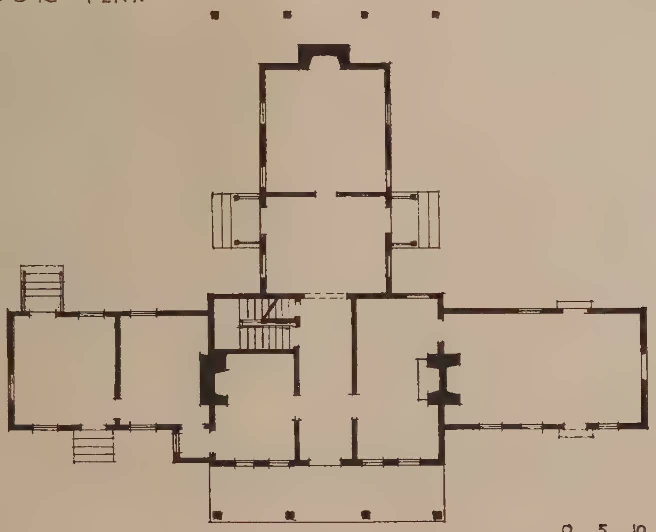


ELEVATION OF NORTH SIDE OF HALL

SCALE 0 1 2 3 4 5 6 7 8 9 10 FEET



SECOND FLOOR PLAN

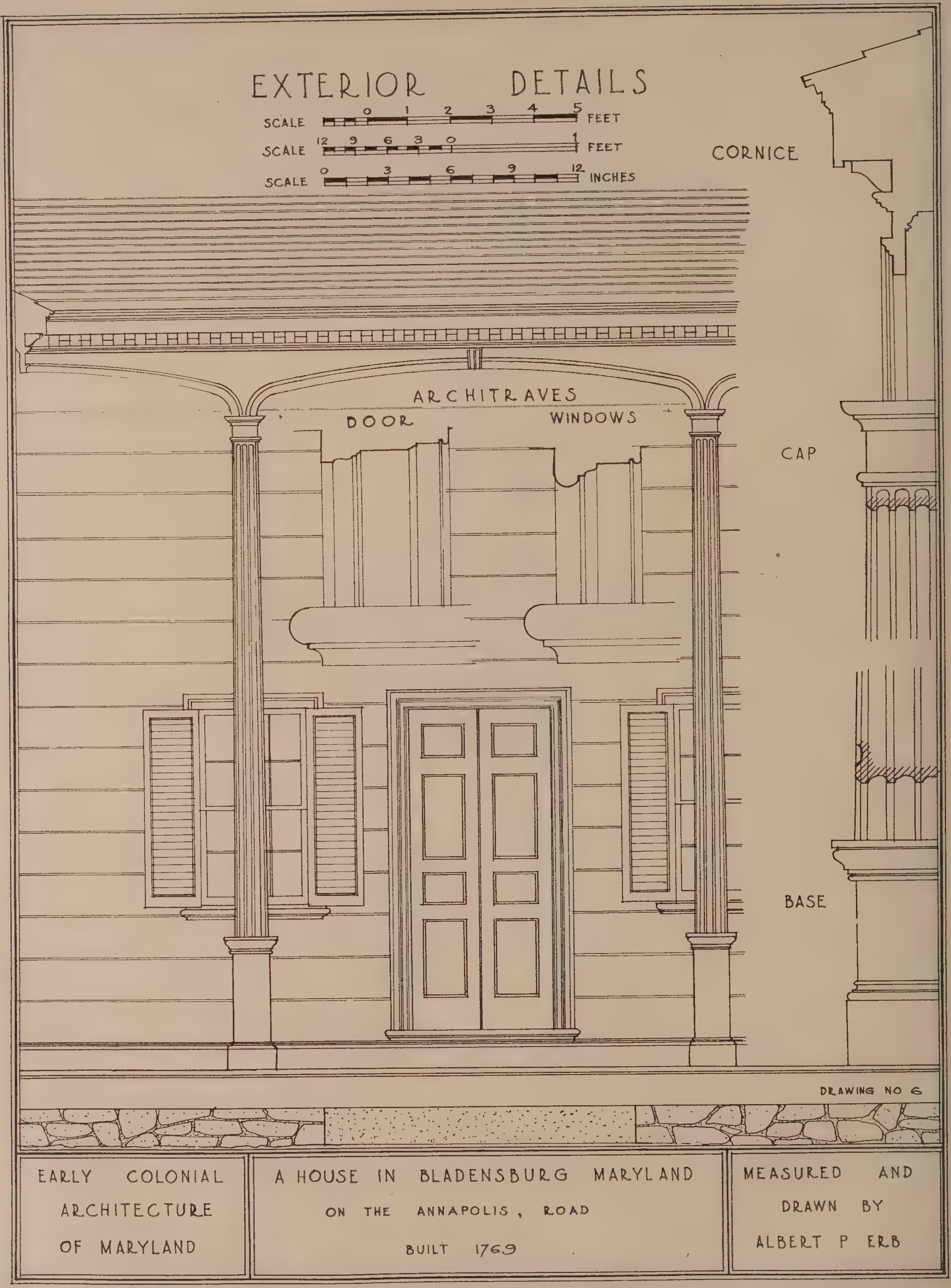


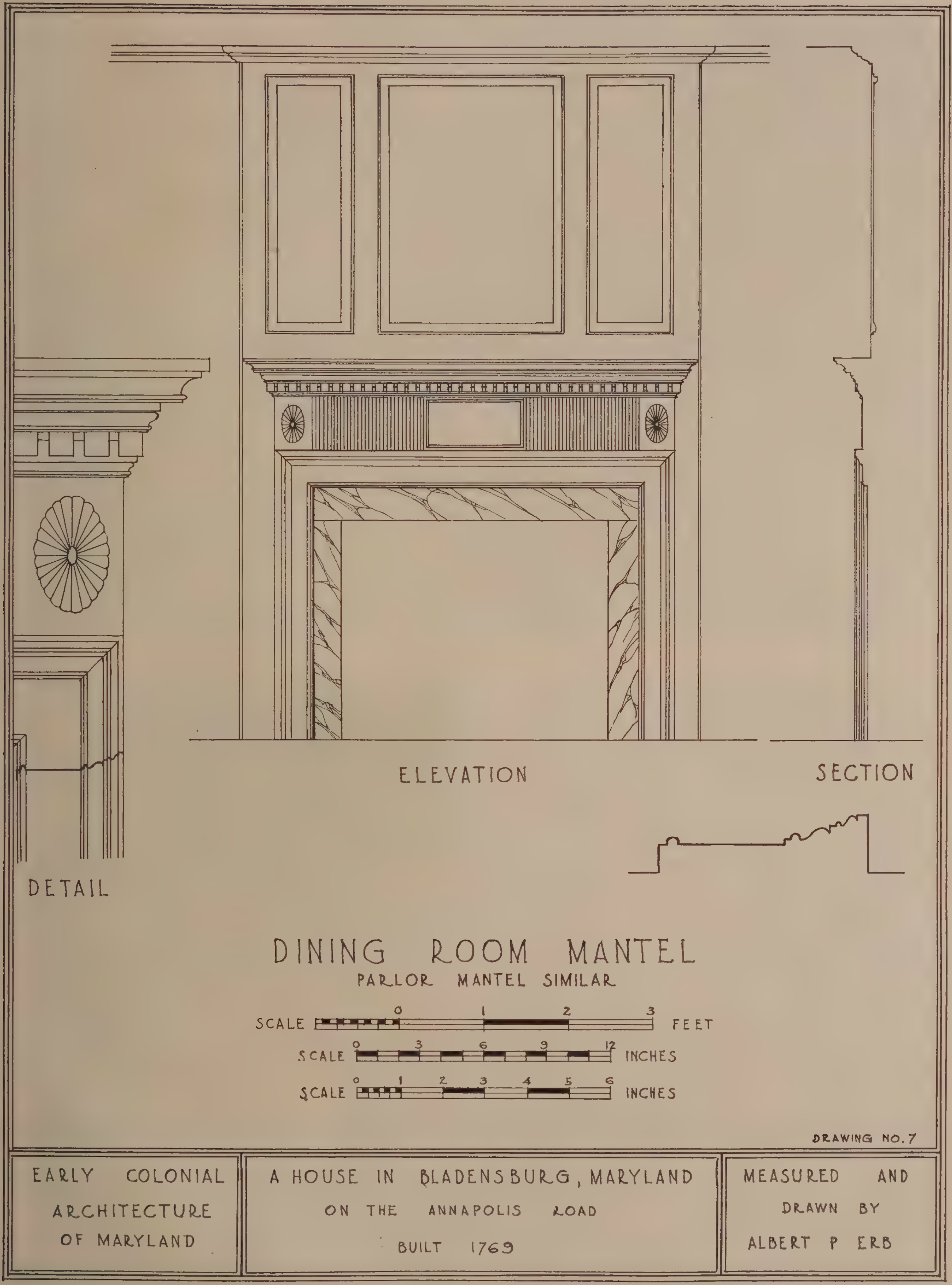
FIRST FLOOR PLAN

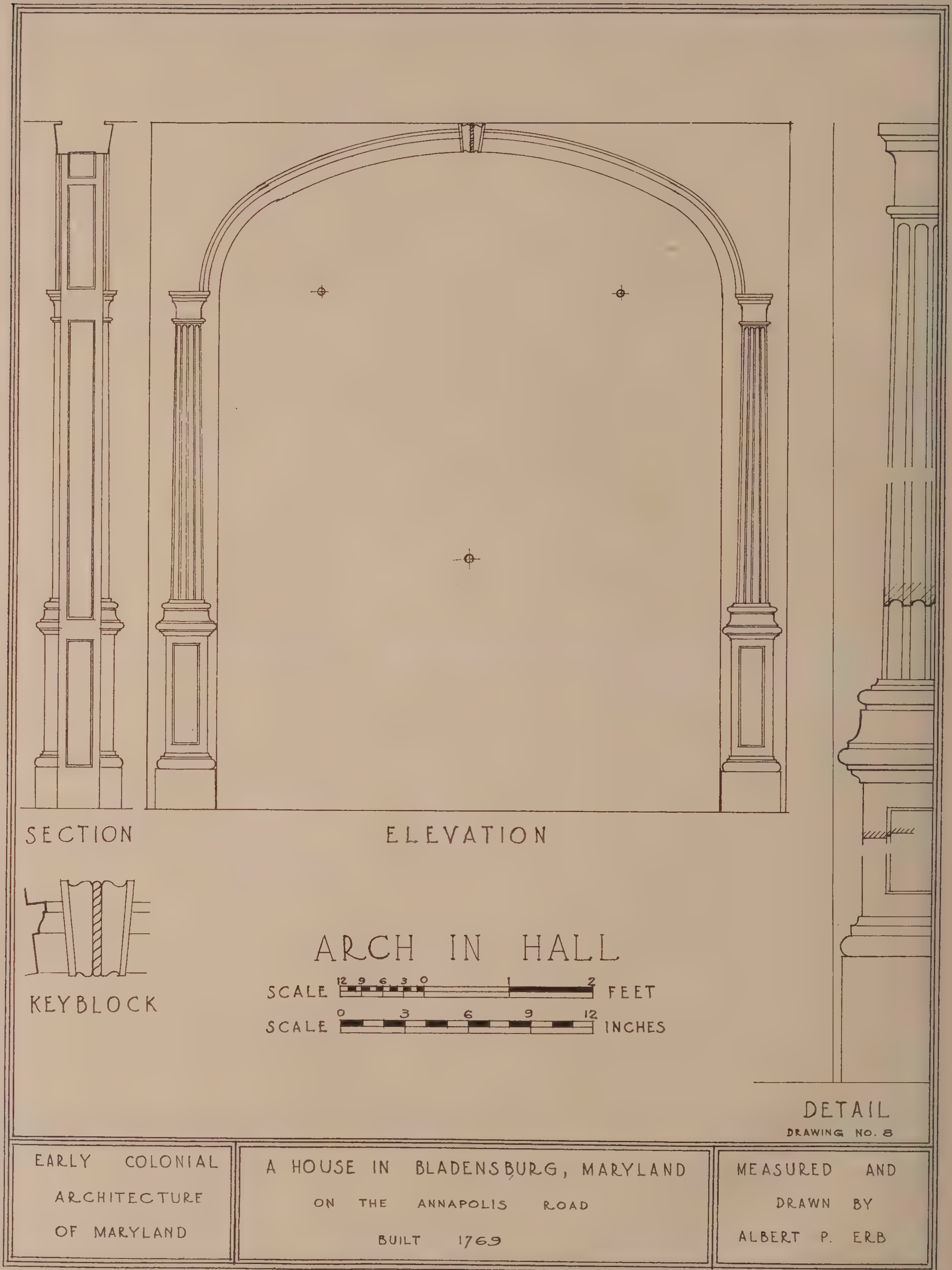
SCALE 0 5 10 15 20 25 30 FEET

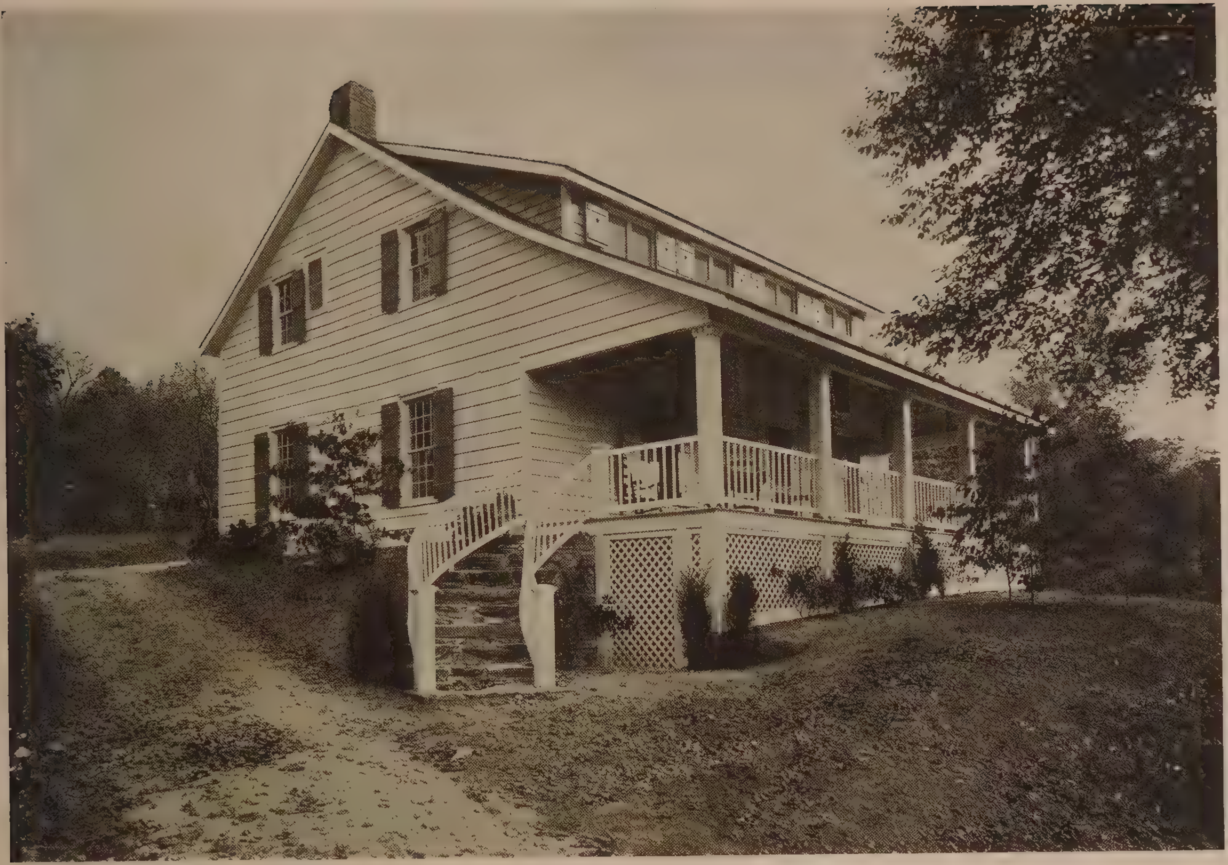
DRAWING NO. 5

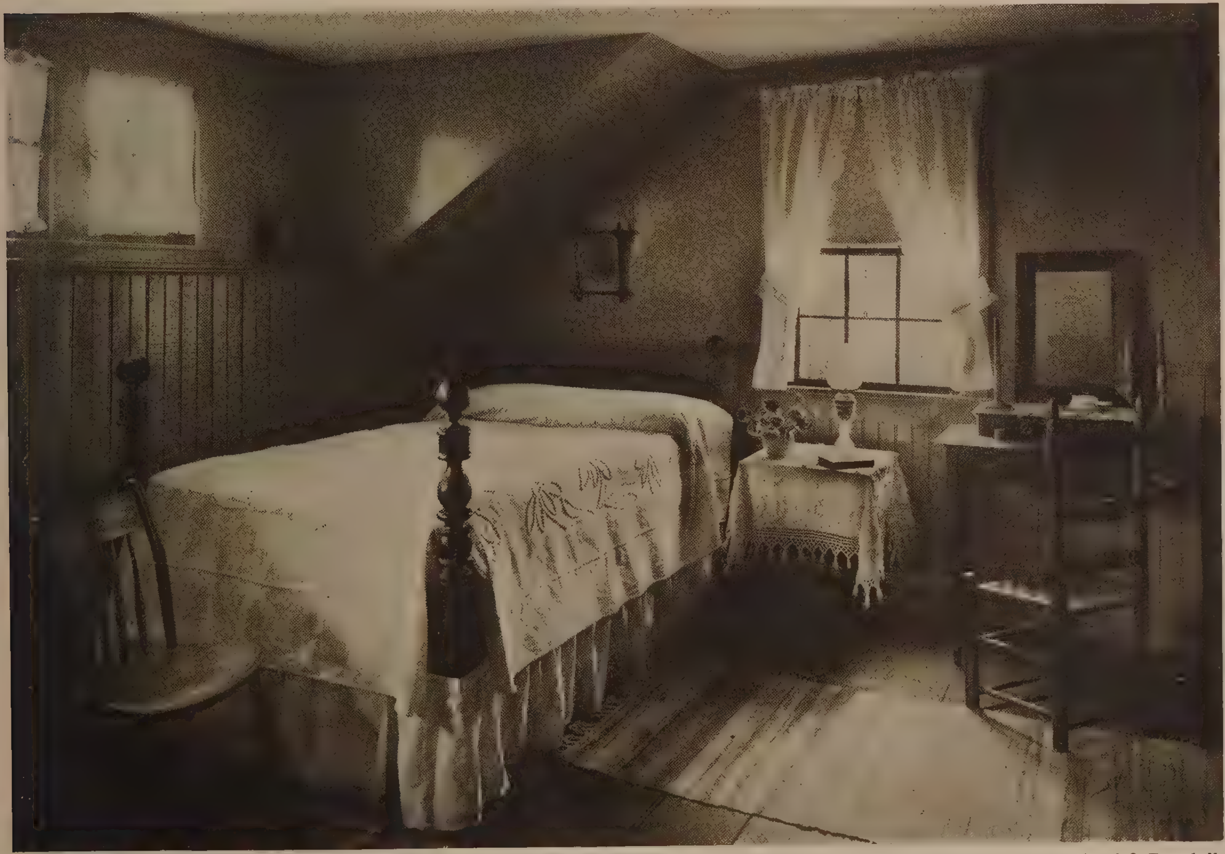
EARLY COLONIAL ARCHITECTURE OF MARYLAND	A HOUSE IN BLADENSBURG, MARYLAND ON THE ANNAPOLIS ROAD BUILT 1769	MEASURED AND DRAWN BY ALBERT P ERB


EXTERIOR DETAILS
SCALE 0 1 2 3 4 5 FEET
SCALE 12 9 6 3 0 1 FEET
SCALE 0 3 6 9 12 INCHES
CORNICE
ARCHITRAVES
DOOR
WINDOWS
CAP
BASE
DRAWING NO 6
EARLY COLONIAL ARCHITECTURE OF MARYLAND
A HOUSE IN BLADENSBURG MARYLAND
ON THE ANNAPOLIS, ROAD
BUILT 1769
MEASURED AND DRAWN BY
ALBERT P ERB


ELEVATION
SECTION
DETAIL
DINING ROOM MANTEL
PARLOR MANTEL SIMILAR
SCALE 0 1 2 3 FEET
SCALE 0 3 6 9 12 INCHES
SCALE 0 1 2 3 4 5 6 INCHES
DRAWING NO. 7
EARLY COLONIAL ARCHITECTURE OF MARYLAND
A HOUSE IN BLADENSBURG, MARYLAND
ON THE ANNAPOLIS ROAD
BUILT 1769
MEASURED AND DRAWN BY
ALBERT P ERB


SECTION
ELEVATION
KEYBLOCK
ARCH IN HALL
SCALE 12 9 6 3 0 1 2 FEET
SCALE 0 3 6 9 12 INCHES
DETAIL
DRAWING NO. 8
EARLY COLONIAL ARCHITECTURE OF MARYLAND
A HOUSE IN BLADENSBURG, MARYLAND
ON THE ANNAPOLIS ROAD
BUILT 1769
MEASURED AND DRAWN BY
ALBERT P. ERB

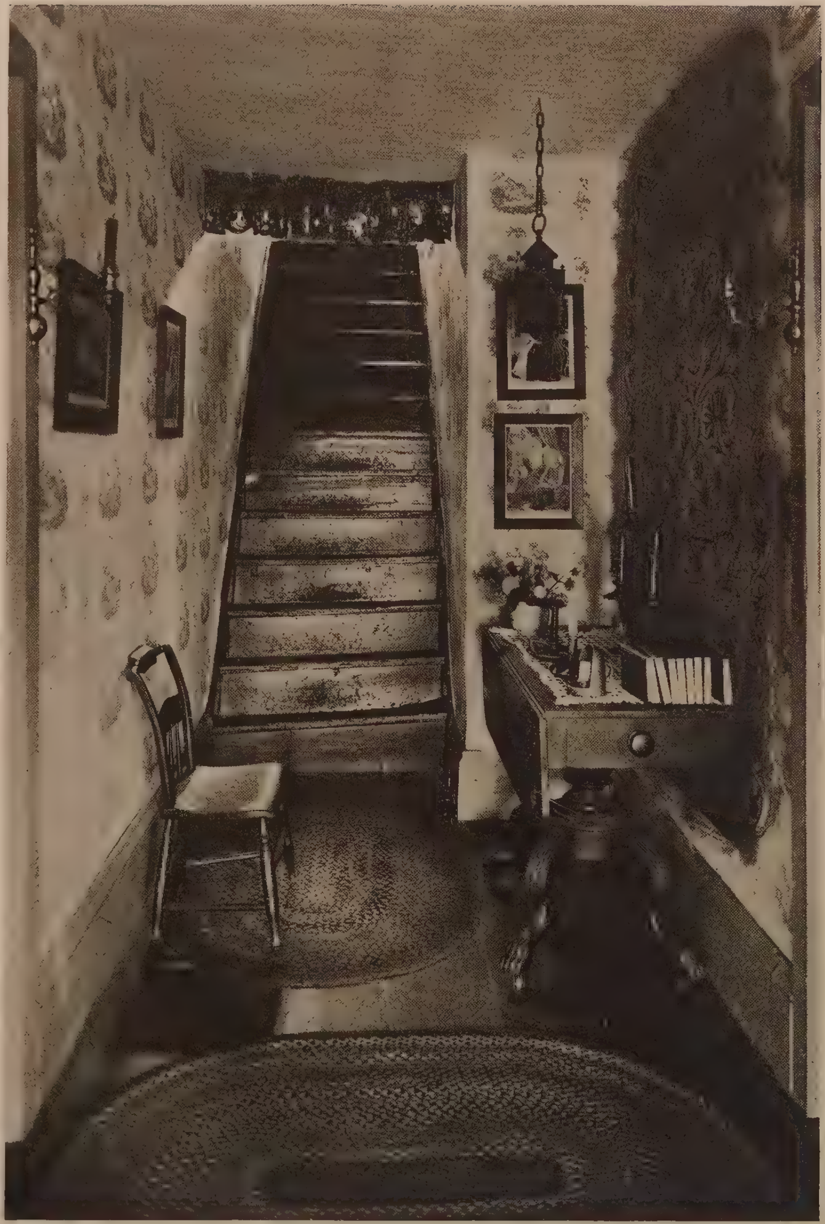




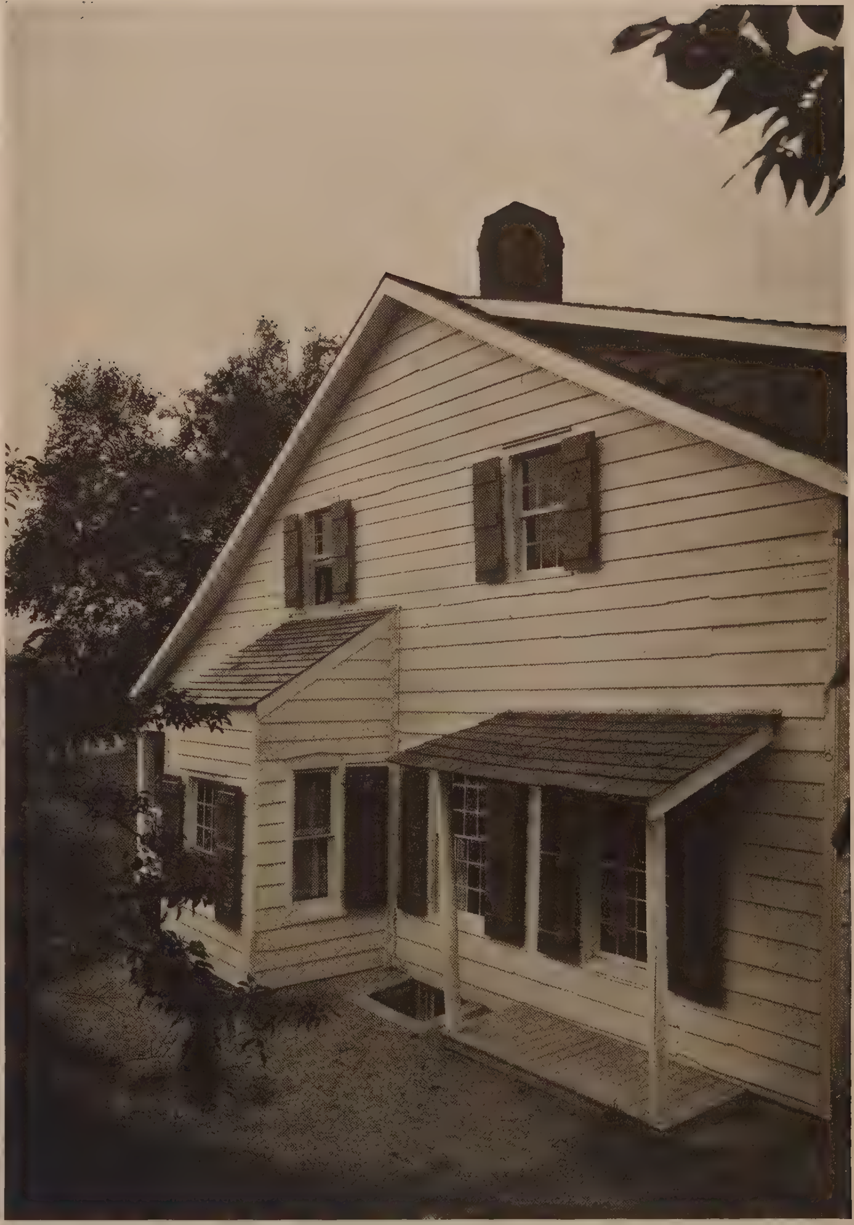
CHAMBER.

Designed by Cleveland & Randall.

ALTERATION OF OLD HOUSE FOR EVANGELINE ADAMS, YORKTOWN HEIGHTS, N. Y.

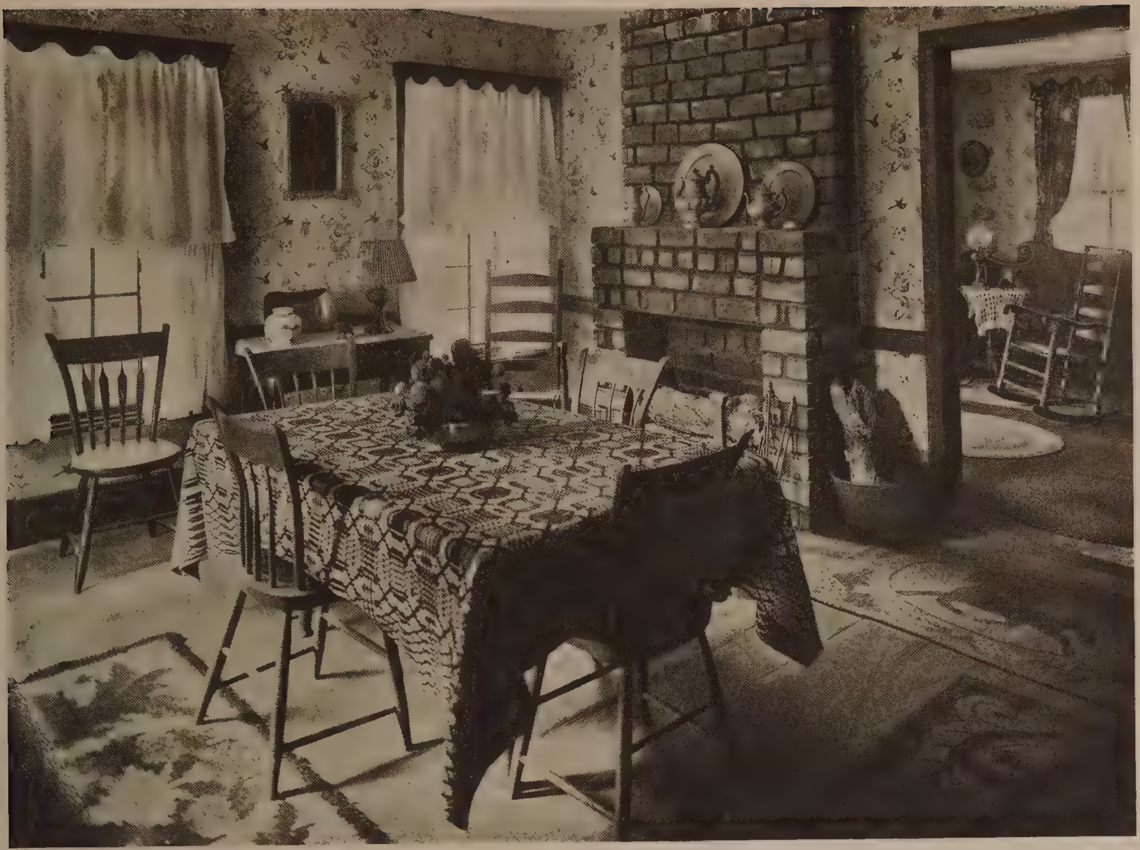


HALL.

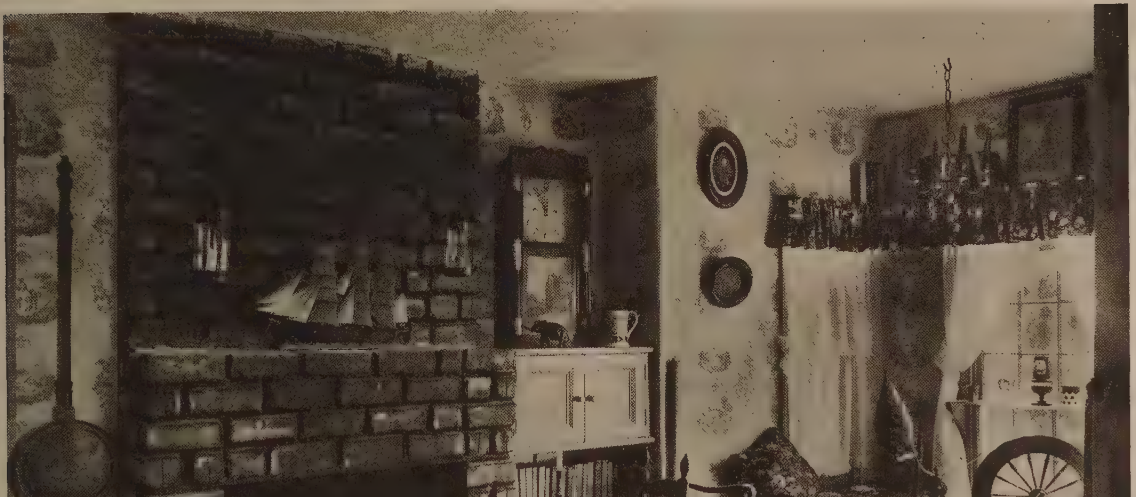


Designed by Cleveland & Randall.

ALTERATION OF OLD HOUSE, YORKTOWN HEIGHTS, N. Y.



DINING-ROOM.



LIVING-ROOM. Designed by Cleveland & Randall.

ALTERATION OF OLD HOUSE YORKTOWN HEIGHTS, N. Y.

Construction of the Apartment-House

By H. Vandervoort Walsh

Professor of Construction, School of Architecture, Columbia University, New York

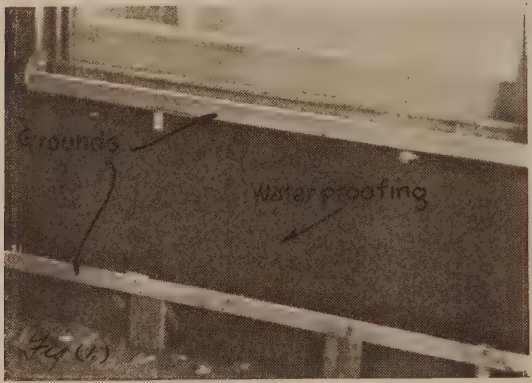
ARTICLE XVII

Rough Woodwork, Plastering, and Trim, in Fire-Proof Apartments

PHOTOGRAPHIC REVIEW OF GENERAL CONSTRUCTION

THERE is a stage in the construction of fire-proof apartments when many little things have to be adjusted to position, and many odd jobs completed, before the partitions can be plastered and the trim set in place.

For example, the backs of window-frames that were built in with the outside walls are usually a few inches forward from the interior face of the wall. In this position no nailing for the interior trim is provided, nor terminating edge around the window for the plaster. To provide for these two things, 2-inch by 4-inch timbers are nailed around the back of the frame, down the sides, and across the bottom. Over the top this 2 inches by 4 inches serves also to support a few wall-backing blocks of terra-cotta, needed to fill in the space over the window up to the spandrel beam on the floor above. (Figure 1.)



Grounds around windows 2" x 4".

Unlike the windows, the door openings in the partitions have nailing for trim provided by the bucks that are made of solid 2¾ inches by 4¼ inches. These bucks, since they are 4¼ inches wide and the partition blocks only 3 inches to 3¼ inches wide, serve as grounds for a ½-inch plaster coating on each side of the partition.

Along the base of the partition blocks ½-inch by 1¾-inch grounds are nailed, at a height above the floor, enough to be slightly lower than the top of the base-board. Short vertical pieces are nailed under this ground every 16 inches on centres. This rough backing is also carried around at the base of the side of the rooms enclosed by outside walls, for plaster is applied directly to the hollow clay tile of the exterior walls without using furring strips, since the interior of all outside walls is brushed over with a water-proofing compound. (Figure 2.)

Where picture-mouldings are to be nailed, ½-inch by ¾-inch rough strips are fastened to the partition blocks for grounds. Although this nailing is provided for the picture-mouldings, usually, no grounds are provided for wall-panelling, since this is not made entirely of wood, but rather thin, wood panel-mouldings are applied to the plaster after it is finished.

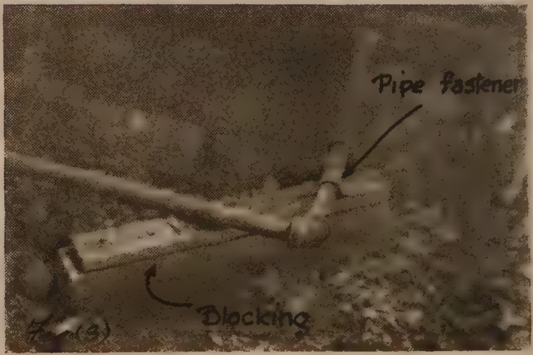
In addition to the above rough woodwork, there are a number of smaller jobs of blocking. For example, radiator pipes that are carried in the floor are held in position on wooden blocks by pipe straps or nails. (Figures 3 and 4.)

Then the sleepers for the flooring have to be laid. These 2-inch by 3-inch sleepers are spaced about 16 inches on centres, and are often held in position by nails into wooden strips laid on the concrete slabs between beams at right angles to the sleepers, and spaced 2 feet apart. (Figure 5.)

Cinder fill is dumped between the sleepers and levelled up to their tops. On the sleepers the rough flooring is nailed, with cracks left between each board. Building paper goes on top of the rough flooring before the finished floors are laid.

There are other details preliminary to the plastering that require attention, such as holes in the partitions made by pipes or electric conduits or outlets. All such holes or chases, if they are too big, are covered over with metal lath. (Figure 6.) Also metal lath is used to cover the wood bucks of doors wherever they extend up to the ceiling above the door opening in the partition. Joints between the tops of block partitions and the underside of concrete-covered beams are reinforced by metal lath, as are other places where cracks might develop between two independent structural parts.

Grounds for Baseboard 1½" x 1¾".



Wood Blocking for pipes in floor.

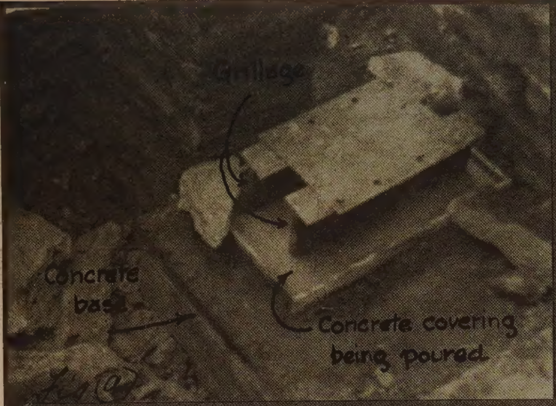


Fig (a)

Grillage Base for Columns

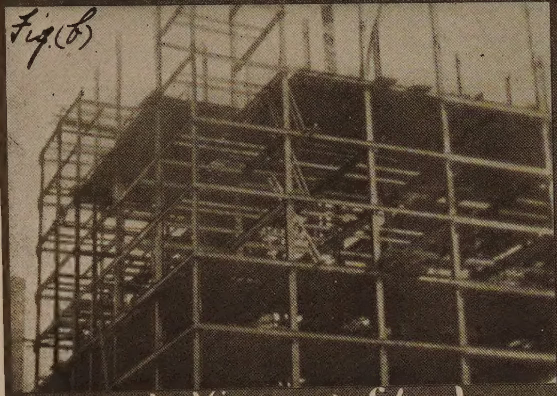


Fig (b)

General View of Steel

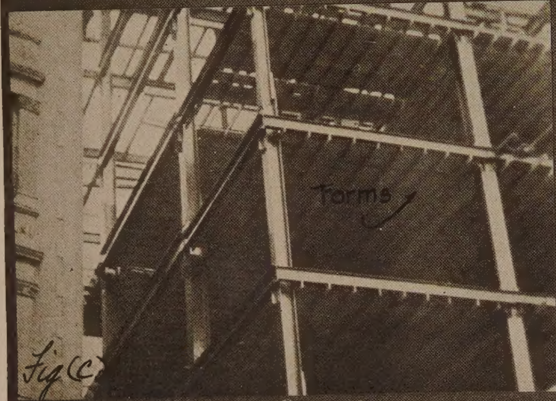


Fig (c)

Forms for Slabs

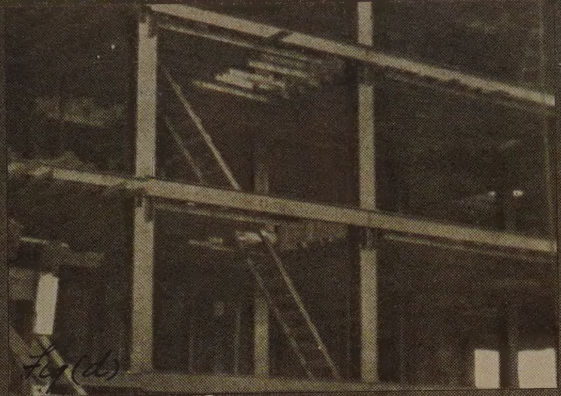


Fig (d)

Spandrel Beams

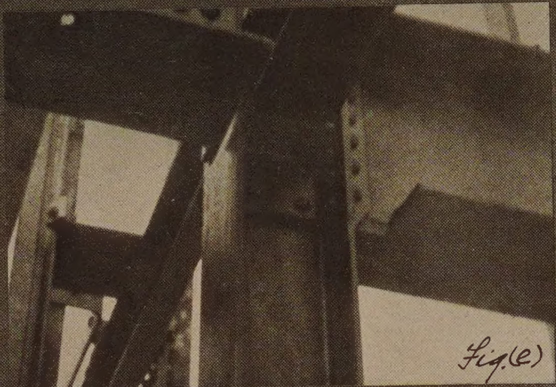


Fig (e)

Column Connections

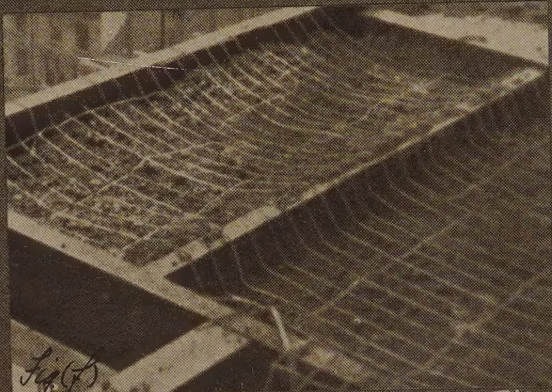


Fig (f)

Floor Slab Reinforcement in Place

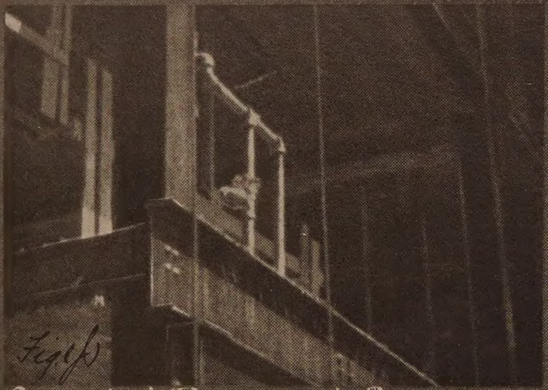
Fig (g)

Floor Slabs Poured and Forms Removed

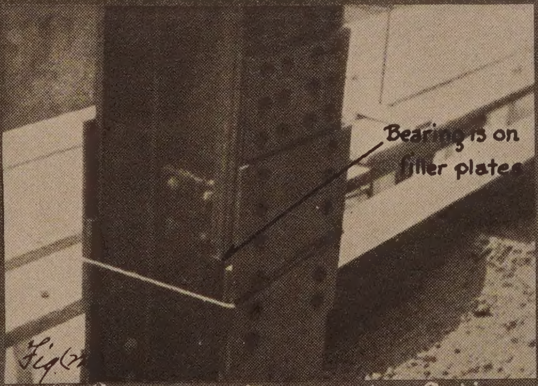
Fig (h)

Stair Construction

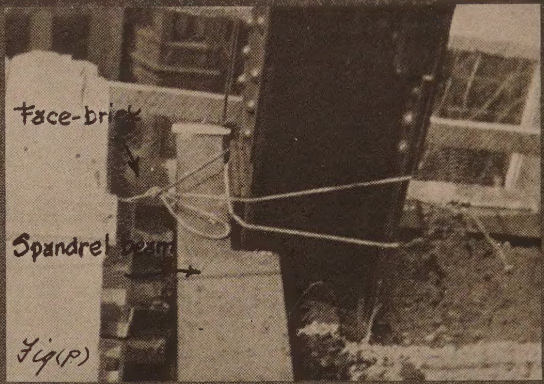
Column Splice, Spandrel Beams, Floor Slabs.



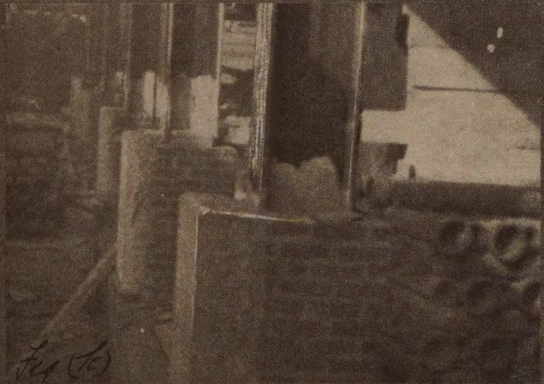
Spandrel Beams at Corner



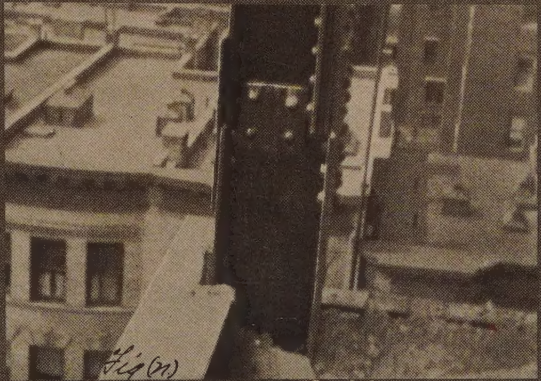
Wall Columns Eccentric Splice.



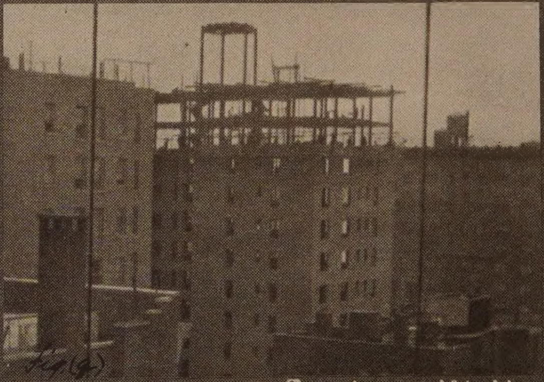
Wall Enclosure on other Side of Column Shown in (O)



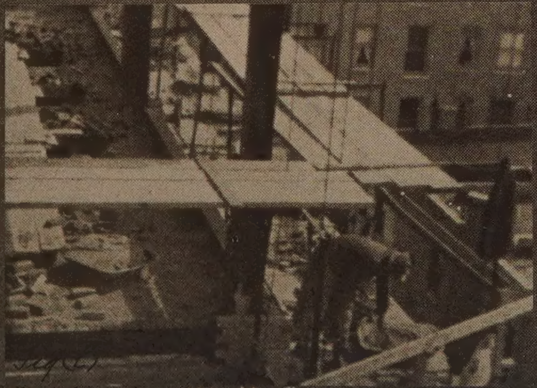
Enclosing Exterior Columns at Street Level



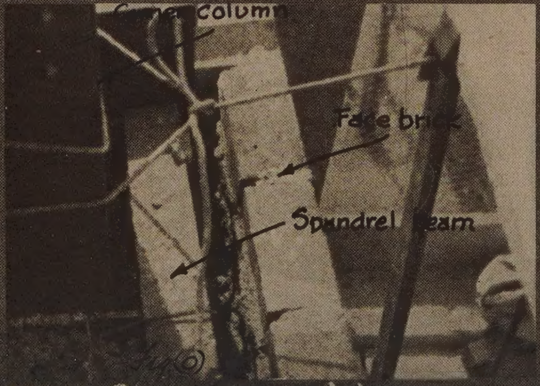
Corner Column Splice



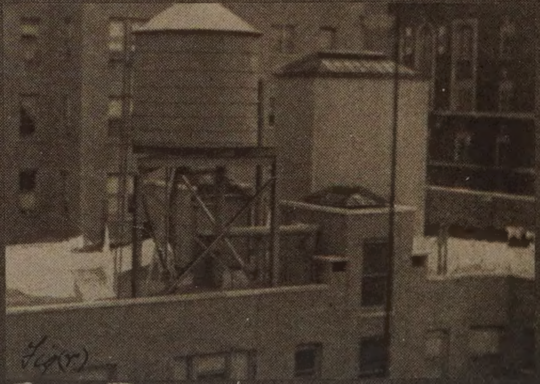
General View of Steel and Walls



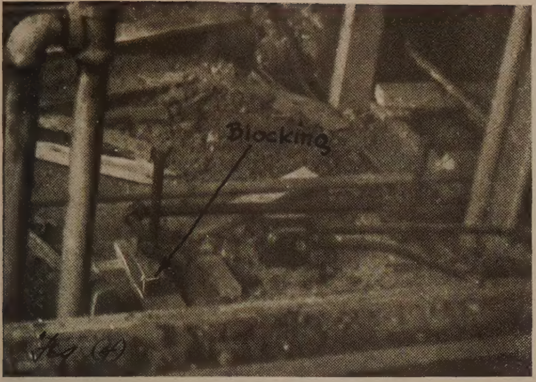
Enclosing Wall Going Up.



Wall Support at Column.



Roof Extensions



Wood blocking for pipes.

Openings in partitions for such things as medicine-cases are backed up with metal lath, and the sides, top, and bottom, framed with 2 by 3's.

When similar odd-and-end jobs have been completed, the way has been cleared for the plastering. This is applied directly to the partition blocks and usually consists of two coats, brown coat and white finish coat. Wherever lath is used as the backing for the plaster, three coats are desirable, the scratch coat with hair in it to form strong keys on the lath, the brown coat to five body and the finished coat the surface.

TABLE FOR MATERIALS USED IN PLASTERING

	PARTS BY WT.
Scratch Coat	
Hydrated Lime	133
Sand	400
Hair	1
or	
Calcined Gypsum	100
Sand	267
Hair	1
or	
Calcined Gypsum	100
Sand	200
Brown Coat	
Hydrated Lime	100
Sand	400
Hair	½
or	
Calcined Gypsum	100
Sand	300
Finish Coat (Smooth)	
Calcined Gypsum	1
Lime Paste	3

In visiting the average fire-proof apartment, going up to-day in New York City, we have noticed that there is an almost universal acceptance of painted trim and stippled and painted plaster walls. This is a very sanitary and cheerful tendency, but monotonous.

The wood selected for the trim is either white wood or gum. The floors are usually 2¼-inch oak, stained gray, some being finished with borders of walnut and birch. The floors in the servants' rooms are sometimes composition or yellow pine. Closet floors are very often composition.

The base-boards are finished at the bottom with a strip 1½ inches by ⅜ inch that is stained and varnished to match the floor, which eliminates the dirty marks that accumulate on the lower part of painted base-boards.

There is not much originality shown in the treatment of the walls. Those in the living-room and dining-room are nearly always panelled. Thin strips of wood moulding, 1½ inches by ⅜ inch, are glued and toe-nailed to the plaster to form the panels. Where the plaster is painted, the wood strips appear to be mouldings run in the plaster.

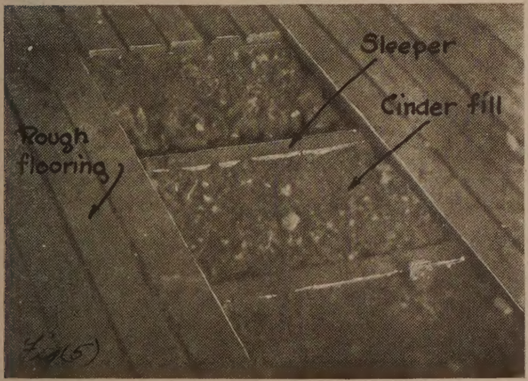
The ceilings in the fire-proof apartments are broken up by the projecting under sides of beams and girders. The girders usually are arranged to come over partitions, but as they are wider than the partitions they make a peculiar step-like break along the top of them. The beams are arranged symmetrically with the room and are usually treated like plaster beams across the ceiling. The cove moulding is used as the common and cheap method of making a transition from vertical surfaces to the ceiling.

Mouldings for door and window trim seem to be stock patterns and are made of ¾-inch material 3⅝ inches wide and finished against the plaster with a back-moulding. All trim has a gouged-out space at the back to permit circulation of air and ease of setting. It is painted on the back and given a priming coat on the face to hold it from moving too much under the damp conditions of a new building.

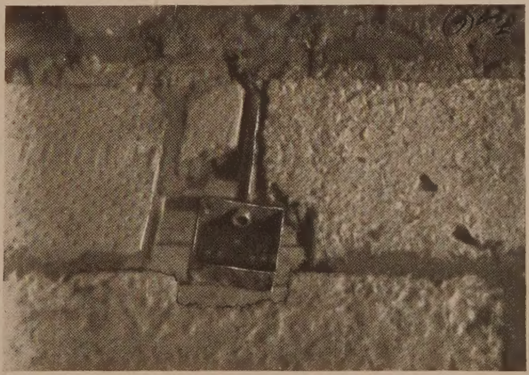
Doors are usually veneered and made 1¾ inches thick and have bottom rails 9½ inches high, styles 4½ inches wide. If thresholds are used they are about ⅝ inch by 4 inches.

Metal-covered wood doors and trim are used where the apartments open into public halls. These doors are 1¾ inches thick and are made in similar panel designs as the wooden doors.

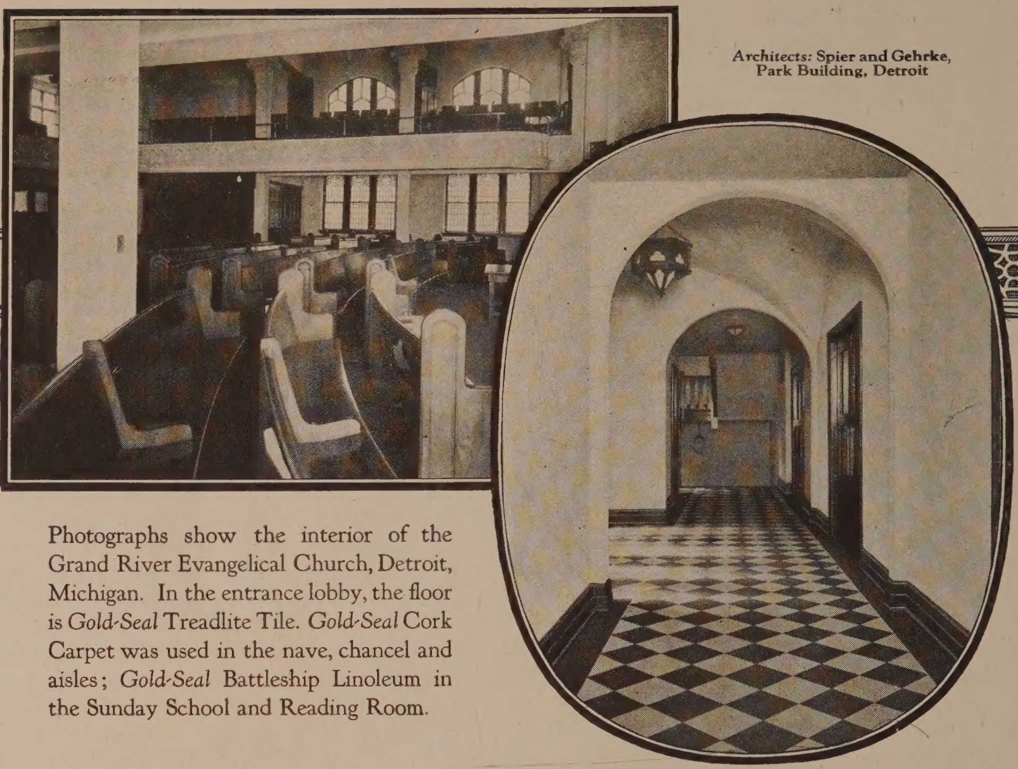
Only rarely in these expensive, high-class apartments is much originality of interior treatment shown. Most of the elegance is in the entrance-hall. The rest of the building seems to follow the common ideas of the day.



Sleepers in the floor fill.



Holes in partitions for pipes and conduits are covered with metal lath.



Architects: Spier and Gehrke,
Park Building, Detroit

Photographs show the interior of the Grand River Evangelical Church, Detroit, Michigan. In the entrance lobby, the floor is *Gold-Seal* Treadlite Tile. *Gold-Seal* Cork Carpet was used in the nave, chancel and aisles; *Gold-Seal* Battleship Linoleum in the Sunday School and Reading Room.

The Problem of Church Floors

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